



**Stellungnahme zum
Leibniz-Institut für Altersforschung – Fritz-Lipmann-Institut e. V. (FLI)
Jena**

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Vorbemerkung

Der Senat der Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz – Leibniz-Gemeinschaft – evaluiert in Abständen von spätestens sieben Jahren die Forschungseinrichtungen und Einrichtungen mit Servicefunktion für die Forschung, die auf der Grundlage der Ausführungsvereinbarung „Forschungseinrichtungen“¹ von Bund und Ländern gemeinsam gefördert werden. Diese Einrichtungen haben sich in der Leibniz-Gemeinschaft zusammengeschlossen. Die wissenschaftspolitischen Stellungnahmen des Senats werden vom Senatsausschuss Evaluierung vorbereitet, der für die Begutachtung der Einrichtungen Bewertungsgruppen mit unabhängigen Sachverständigen einsetzt. Die Stellungnahme des Senats sowie eine Stellungnahme der zuständigen Fachressorts des Sitzlandes und des Bundes bilden in der Regel die Grundlage, auf der der Ausschuss der Gemeinsamen Wissenschaftskonferenz (GWK) überprüft, ob die Einrichtung die Voraussetzungen für die gemeinsame Förderung durch Bund und Länder weiterhin erfüllt.

Auf der Grundlage der vom Leibniz-Institut für Altersforschung – Fritz-Lipmann-Institut e. V. (FLI) eingereichten Unterlagen wurde eine Darstellung der Einrichtung erstellt, die mit der Einrichtung sowie den zuständigen Ressorts des Sitzlandes und des Bundes abgestimmt wurde (Anlage A). Die vom Senatsausschuss Evaluierung eingesetzte Bewertungsgruppe hat das FLI am 29./30. Mai 2008 besucht und daraufhin einen Bewertungsbericht erstellt (Anlage B). Auf der Grundlage dieses Bewertungsberichts und der vom FLI eingereichten Stellungnahme zum Bewertungsbericht (Anlage C) erarbeitete der Senatsausschuss den Entwurf einer Senatsstellungnahme. Der Senat der Leibniz-Gemeinschaft hat die Stellungnahme am 27. November 2008 erörtert und verabschiedet. Er dankt den Mitgliedern der Bewertungsgruppe und des Senatsausschusses Evaluierung für ihre Arbeit.

1. Beurteilung und Empfehlungen

Der Senat schließt sich der Beurteilung und den Empfehlungen der Bewertungsgruppe an.

Das FLI befasst sich mit der Aufklärung molekularer Mechanismen, die dem menschlichen Alterungsprozess zugrunde liegen und die zu altersbedingten Erkrankungen führen. Dieses weit gefächerte, gesellschaftlich hoch aktuelle und wissenschaftlich anspruchsvolle Themenfeld wurde nach dem Amtsantritt des derzeitigen Direktors am 1. Oktober 2003 konzeptionell in den Mittelpunkt des Instituts gerückt, das bis Mai 2005 unter dem Namen Institut für Molekulare Biotechnologie (IMB) firmierte. Die Namensänderung des Instituts dokumentiert die starke inhaltliche Neuausrichtung der Forschungseinrichtung.

Die **wissenschaftlichen Leistungen** am FLI sind sehr gut und international sichtbar. Die Einwerbung von Drittmitteln, insbesondere von Mitteln der Deutschen Forschungsgemeinschaft (DFG), hat gegenüber der Situation der vergangenen Begutachtung erheblich zugenommen. Es bestehen sehr gute wissenschaftliche Grundlagen für eine Verbesserung der Publikationsleistung in einigen Arbeitsgruppen und für eine weitere vom FLI angestrebte Erhöhung der Drittmittel-Einnahmen.

¹ Ausführungsvereinbarung zur Rahmenvereinbarung Forschungsförderung über die gemeinsame Förderung von Einrichtungen der wissenschaftlichen Forschung (AV-FE) / zum Verwaltungsabkommen zwischen Bund und Ländern über die Errichtung einer Gemeinsamen Wissenschaftskonferenz (GWK-Abkommen)

Bei der vergangenen Evaluierung im Oktober 1999, auf der die wissenschaftspolitische Stellungnahme des Wissenschaftsrates vom 19. Januar 2001 basiert, wurde festgehalten, dass das Institut zukünftig ein kohärentes und tragfähiges Forschungsprogramm in Abstimmung mit den Plänen der benachbarten Einrichtungen auf dem Jenenser Beutenberg-Campus auflegen soll. Es wurde außerdem erwartet, dass eine Direktorin oder ein Direktor mit eindeutiger Richtlinienkompetenz und Weisungsbefugnis bestellt werde. Die Beschäftigten am Institut sollten darauf verpflichtet werden, das Forschungs- und Entwicklungskonzept mitzutragen. Auch sollte der Wissenschaftliche Beirat erheblich stärker in die Entwicklung des Instituts und in die Zukunftsplanung aktiv eingebunden werden. Der Freistaat Thüringen setzte eine Kommission ein, um eine Neuausrichtung und Neustrukturierung des damaligen IMB zu erreichen. Dieser Prozess führte zur Berufung des neuen Direktors Ende 2003.

Vor dem Hintergrund dieser seinerzeit ausgesprochen schwierigen Situation ist festzustellen, dass in den vergangenen viereinhalb Jahren eine beeindruckende Aufbauleistung stattgefunden hat. In dieser Zeit ist es gelungen, ein neuartiges Konzept mit einer überzeugenden Grundrichtung zu formulieren und dessen Umsetzung in die Forschungspraxis in Gang zu setzen. Aufgrund seiner hohen Aktualität steht das Konzept in einem starken nationalen und internationalen Wettbewerb. Es bedarf daher auch weiterhin einer Schärfung und Weiterentwicklung.

Ausgesprochen bemerkenswert ist, wie stark sich das Institut in den vergangenen Jahren international geöffnet hat und damit für jüngere Wissenschaftlerinnen und Wissenschaftler aus dem In- und Ausland attraktiv wurde. Diese Veränderung hat zu einer sehr offenen und intensiven Kommunikationskultur beigetragen. Der international rekrutierte **wissenschaftliche Nachwuchs** profitiert im Bereich der Doktorandenausbildung von der *Leibniz Graduate School on Aging and Age-related Diseases* (LGSA), die die Promotionsphase überzeugend strukturiert. Die personelle Zusammensetzung der derzeit zehn Nachwuchsgruppen am FLI dokumentiert ebenso die internationale Öffnung.

Die **Kooperation** des FLI mit der Friedrich-Schiller-Universität Jena und anderen Forschungseinrichtungen am Ort ist sehr gut. Es ist gelungen, das FLI auf dem Beutenberg-Campus in Jena fest zu verankern und gemeinsam mit dem benachbarten Leibniz-Institut für Naturstoff-Forschung und Infektionsbiologie e. V. – Hans-Knöll-Institut (HKI), der Universität Jena und dem Max-Planck-Institut für chemische Ökologie in einen regen und den Forschungsalltag prägenden Austausch zu treten. Sieben der zehn *senior scientists* des FLI sind gemeinsam mit der Universität Jena berufen. Das FLI ist zudem wesentlich an einem Sonderforschungsbereich der Universität Jena beteiligt.

Diese Entwicklungen sind Ergebnis einer exzellenten **Leitung** der Einrichtung, der es gelungen ist, unter Einbeziehung der am Institut bereits vorhandenen Kenntnisse Neues aufzubauen. Wie das FLI in seiner Stellungnahme festhält, ist inzwischen auch die Nachfolge für den amtierenden Direktor geregelt. Dass ein renommierter Wissenschaftler aus dem Ausland gewonnen werden konnte, ist ein Beleg für die weit über die Region hinausreichende wissenschaftliche Bedeutung des FLI. Die Verwaltung des FLI arbeitet sehr effizient. Der Wissenschaftliche Beirat hat die positive Entwicklung des FLI ausgezeichnet mit geprägt, z. B. durch regelmäßige kritische Begutachtungen der Arbeitsgruppen.

Die apparative **Ausstattung** des FLI ist weitgehend angemessen. Mit dem im Bau befindlichen Ergänzungsgebäude, das Anfang 2010 bezugsfertig sein soll, wird die derzeit nicht befriedigende Raumsituation verbessert.

Für die Arbeit der nächsten Jahre werden folgende **Anregungen, Hinweise und Empfehlungen** besonders hervorgehoben:

1. Das Konzept Altersforschung ist in der internationalen Forschungslandschaft nach wie vor vergleichsweise neu. Es liegt in der Natur der Sache, dass die Kriterien für den Ein- oder Ausschluss von Fragestellungen insgesamt gesehen derzeit in der Wissenschaft international intensiv diskutiert werden. Das FLI muss sich – wie Leitung sowie Mitarbeiterinnen und Mitarbeitern bewusst ist – an diesem Prozess der Entwicklung des neuartigen Forschungsgebiets weiterhin aktiv beteiligen. Dabei muss das FLI einerseits offen für die Entwicklungen in den einschlägigen etablierten Disziplinen und an diese anschlussfähig bleiben, andererseits jedoch das eigene Profil so schärfen, dass es unverwechselbar bleibt angesichts einer zunehmenden Besetzung des neuen Forschungsfeldes auch durch andere neue Forschungseinrichtungen, wie etwa des in Gründung befindlichen Max-Planck-Instituts für Biologie des Alterns in Köln oder des entstehenden Helmholtz-Zentrums Bonn – Deutsches Zentrum für Neurodegenerative Erkrankungen. Diese Balance zu erreichen, ist bei den im Einzelnen anstehenden inhaltlichen und personellen Entscheidungen eine schwierige und anspruchsvolle Aufgabe. Das FLI besitzt die Voraussetzungen, damit gut umzugehen.
2. Es ist – gerade auch vor dem Hintergrund der erforderlichen Profilierung des FLI im sich entwickelnden Forschungsgebiet Altersforschung – überzeugend, dass das Institut im Rahmen seiner konzeptionellen Entwicklung die Verbindung in die klinische Forschung intensivieren möchte. Die vorgesehene Betonung der Erforschung von altersbedingten Erkrankungen im Gesamtkonzept des FLI, besonders die Planungen zur Einrichtung einer *Leibniz Research School for Clinician-Scientists*, wird daher sehr begrüßt und sollte weiter verfolgt werden.
3. Die Bioinformatik sollte in den nächsten Jahren weiter ausgebaut werden. Die Überlegungen am FLI, eine Datenbank für Altersforschung aufzubauen, sind im Grundsatz verfolgenswert, stehen jedoch noch in den ersten Anfängen und müssen konzeptionell präziser und intensiver vorbereitet werden.
4. Die Einwerbung von Drittmitteln, insbesondere der DFG, ist in den vergangenen drei Jahren bemerkenswert angestiegen. Es wird gleichwohl empfohlen, den Anteil der Drittmittel am Gesamthaushalt zukünftig deutlich zu steigern. Dabei sollten unter anderem auch die Möglichkeiten der Förderung durch Programme auf europäischer Ebene genutzt werden.
5. Nationale und internationale Kontakte des FLI sollten weiter vertieft werden. Es wird empfohlen, die Anzahl längerer Aufenthalte von ausländischen Gästen, die in der Forschung etabliert sind, zu erhöhen. Auch die Gastaufenthalte von Wissenschaftlerinnen und Wissenschaftlern des FLI an Forschungseinrichtungen im Ausland sollten gesteigert werden.
6. Das FLI plant, weitere Nachwuchsgruppen einzurichten. Dies wird im Grundsatz begrüßt. Zu beachten ist dabei, dass eine Erhöhung der Zahl der Nachwuchsgruppen in einem angemessenen Verhältnis zur Zahl der Arbeitsgruppen stehen sollte, die von etablierten Wissenschaftlerinnen und Wissenschaftlern geleitet werden.
7. Die Ausstattung mit Großgeräten ist weitgehend angemessen. Es wird jedoch ein wissenschaftlich gut begründeter Bedarf gesehen, die Kernresonanzspektroskopie (NMR-Spektroskopie) zu modernisieren. Diese kommt nicht ausschließlich dem FLI zugute, son-

dem ebenso anderen Forschungsinstitutionen in Jena, etwa im Rahmen der gemeinsamen Arbeit im Sonderforschungsbereich 604 „Multifunktionelle Signalproteine“. Unabhängig davon wird angeregt, durch eine gemeinsame Beschaffung von Großgeräten mögliche Synergien zwischen verschiedenen Forschungseinrichtungen in Jena auszuschöpfen.

8. Damit die neue Infrastruktur in der Tierhaltung angemessen genutzt werden kann, ist es erforderlich, die Personalausstattung für die Tierpflege zukünftig deutlich zu erhöhen. Acht weitere Stellen für diese Aufgabe sind wissenschaftlich bestens begründet.
9. Die Geldgeber sollten, damit das Programmbudget gut ausgeführt werden kann, eine Flexibilisierung des Haushalts ermöglichen. Erforderlich sind insbesondere eine erweiterte Übertragbarkeit der Mittel sowie eine Lockerung der Verbindlichkeit des Stellenplans im Sinne der von Bund und Ländern vorgesehenen Mindestanforderungen an Programmbudgets.

Zusammenfassend hält der Senat fest, dass das FLI das gesellschaftlich aktuelle Thema Altersforschung zu einer Zeit aufgegriffen hat, als es noch an keinem anderen Ort in Deutschland in den Mittelpunkt einer Forschungseinrichtung gerückt wurde. Das FLI hat damit eine klare, international sichtbare Profilbildung betrieben. Es kann sich dem wachsenden wissenschaftlichen Wettbewerb auf dem nach wie vor relativ neuen Gebiet sehr gut stellen. Das FLI ist überregional bedeutsam und seine Arbeit liegt im gesamtstaatlichen Interesse. Das wissenschaftliche Konzept des FLI lässt sich an einem universitären Institut nicht umsetzen. Einer Hochschule wäre es nicht möglich, eine derart umfangreiche apparative, räumliche und personelle Ausstattung so klar auf das zentrale Thema Altersforschung hin zu fokussieren. Eine Eingliederung in eine Hochschule wird daher nicht empfohlen.

2. Zur Stellungnahme des FLI

Das FLI hat zum Bewertungsbericht Stellung genommen (Anlage C). Zum Zeitpunkt des Institutsbesuchs durch die Bewertungsgruppe war noch offen, wie die Nachfolge des amtierenden Direktors geregelt wird. Das Institut erläutert, dass inzwischen ein Wissenschaftler aus Großbritannien den Ruf (gemeinsame Berufung FLI und Universität Jena) angenommen hat. Das Institut geht davon aus, dass der Nachfolger die Stelle Anfang 2009 antritt.

Der Senat begrüßt diese Entwicklung.

3. Förderempfehlung

Der Senat der Leibniz-Gemeinschaft empfiehlt Bund und Ländern, das FLI als Forschungseinrichtung auf der Grundlage der Ausführungsvereinbarung „Forschungseinrichtungen“ weiter zu fördern.

Annex A: Presentation

Leibniz Institute for Age Research – Fritz Lipmann Institute (FLI)¹ Jena

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¹ This presentation, compiled by the Evaluation Office, has been approved by the institute and the relevant Federal and State departments.

List of Abbreviations

BLK	Bund-Länder Commission for Educational Planning and Research Promotion (<i>Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung</i>), Bonn (since 01.01.2008: <i>Gemeinsame Wissenschaftskonferenz (GWK)</i> , Bonn)
BMBF	Federal Ministry of Education and Research (<i>Bundesministerium für Bildung und Forschung</i>), Bonn
DFG	German Research Foundation (<i>Deutsche Forschungsgemeinschaft</i>)
DNA	Deoxyribonucleic acid
EU	European Union
FLI	Leibniz Institute for Age Research – Fritz Lipmann Institute
FSU	Friedrich Schiller University of Jena
FTE	Full-time equivalent
GDR	German Democratic Republic (<i>Deutsche Demokratische Republik, DDR</i>)
GSF	Helmholtz Zentrum München – German Research Center for Environmental Health (formerly: <i>Forschungszentrum für Umwelt und Gesundheit</i>)
HKI	Leibniz Institute for Natural Product Research and Infection Biology e. V. – Hans-Knöll-Institute (<i>Leibniz-Institut für Naturstoff-Forschung und Infektionsbiologie e. V. – Hans-Knöll-Institut</i>), Jena
IMB	Institute of Molecular Biology (<i>Institut für Molekulare Biotechnologie e. V.</i>), Jena
LGSA	Leibniz Graduate School on Aging and Age-related Diseases
LOM	Performance-based allocation of resources (<i>Leistungsorientierte Mittelvergabe</i>)
MPG	Max Planck Society
mRNA	Messenger RNA
NIH	National Institutes of Health, Maryland, United States
NMR	Nuclear magnetic resonance
PAKT	Pact for Research and Innovation (<i>Pakt für Forschung und Innovation</i>)
RNA	Ribonucleic acid
RNAi	RNA interference
SAB	Scientific Advisory Board
SAW	Senate Competition Committee (<i>Senatsausschuss Wettbewerb</i>)
SFB	Collaborative Research Centre (<i>Sonderforschungsbereich</i>)
SWS	Units per Week per Semester (<i>Semesterwochenstunden</i>)
ThULB	Thuringian University and State Library, Jena
TKM	<i>Thüringer Kultusministerium</i>
VBMF	<i>Verbund Biomedizinische Forschung Jena e. V.</i>
ZMBH	Centre for Molecular Biology of the University of Heidelberg

1. Development and Funding

As the predecessor of the Leibniz Institute for Age Research – Fritz Lipmann Institute (FLI), the Institute of Molecular Biotechnology (IMB) was founded in 1991 to replace part of the GDR Academy of Sciences Institute ZIMET (*Zentralinstitut für Mikrobiologie und experimentelle Therapie*). The proposed research focus of IMB on molecular evolutionary biotechnology was new and meant recruiting new scientific staff. As some of the professors recruited, including the director, and some other members of staff left the IMB after only a few years, much of the original focus was lost, so that the IMB did not find a sufficiently coherent research concept. A period of frequently changing scientific directorships followed.

Since 1992, the institute has been receiving institutional funding from the German Federal Government and regional funding from the German states (*Länder*) at a ratio of 50:50². The *Thüringer Kultusministerium* (TKM) is responsible for related matters at state level, while the Federal Ministry of Education and Research (BMBF) is the body responsible at national (federal) level.

In 1999, the IMB was evaluated by the German Science Council (*Wissenschaftsrat*) who recommended continued funding of the IMB provided that the institute could be restructured comprehensively. Based on the statement by the German Science Council of January 19, 2001, and a joint statement by the TKM and the BMBF, the committee of the *Bund-Länder* Commission for Educational Planning and Research Promotion (BLK)³ subsequently decided on September 4, 2001, to continue funding the IMB. Independently, but also primed by the German Science Council recommendation, the TKM called in a committee to develop a strategy for the whole Beutenberg Campus in Jena, including the IMB. In the year 2001, the committee proposed recruiting a new director for the IMB whose task would be to introduce, in conjunction with existing staff and by complementing existing expertise, a biomedical theme for the institute and to enhance the profile of the institute.

The current director of the institute was appointed on October 1, 2003. During the years 2003 and 2004, IMB developed a new scientific concept and decided to focus its future activities on the biological field of aging and age-related diseases. In 2005, the institute was renamed Leibniz Institute for Age Research – Fritz Lipmann Institute.

2. General Research Concept, Main Work Programmes and Focus Areas

According to the institute's statute, the overall **mission** of FLI is the support of research and development in the area of age research with the ultimate aim to contribute to healthy human aging. The institute pursues this long term goal by studying the molecular and genetic mechanisms of aging and of age-related diseases. In the opinion of FLI, it is highly likely that the mechanisms causing aging and those causing age-associated diseases and disabilities are interconnected. The vision of FLI is, therefore, that understanding the mechanisms of both the process of cellular aging and senescence, and of specific disease processes, will ultimately help

² In accordance with the *Ausführungsvereinbarung zur Rahmenvereinbarung Forschungsförderung über die gemeinsame Förderung von Einrichtungen der wissenschaftlichen Forschung (AV-FE)* / with the *Verwaltungsabkommen zwischen Bund und Ländern über die Errichtung einer Gemeinsamen Wissenschaftskonferenz (GWK-Abkommen)*

³ Since 01.01.2008: *Gemeinsame Wissenschaftskonferenz (GWK)*

improve the health of the elderly and aid in treating age-related diseases. To fulfil its tasks, the institute harbours expertise covering, among others, lifespan research and research in genomic instability, genome analysis, structural biology, bioinformatics, immune aging, developmental biology, metabolic syndrome, neurobiology, and cancer. The different research groups share a common institutional pool of facilities and technologies as well as the use of mouse and fish models. Thus, according to FLI, a high level of thematic coherence and scientific interactions, which are prerequisites for successful work on the different research questions on aging, is reached within FLI.

Presently, the research work of FLI is divided into two **research programmes**, each of them covering several subtopics. The programme “Mechanisms of Aging and Senescence” covers research on lifespan in a new model organism, identification of determinants of healthy human aging and aspects of cellular senescence. Another research focus lies in the identification of longevity-associated markers as well as age-dependent DNA methylation of the human genome. Furthermore, replication, DNA repair and chromosome segregation are investigated, as errors in these processes cause premature aging and contribute to the development of age-associated diseases. Research work on selected aspects of neurodegeneration, impaired tissue homeostasis, genomic variability and cancer are the major areas of focus in the programme “Age-associated Diseases”. In addition, specific questions are addressed that are linked to the metabolic syndrome, including associated conditions of hormonal dysregulation and atherosclerosis. Disease-associated polymorphisms are identified through genome analysis. Furthermore, since embryonic processes are, in part, recapitulated in tissue regeneration, developmentally active genes related to kidney and gonadal disorders are studied in a zebrafish model.

As part of the institute’s restructuring since the year 2003, a total of 21 **research groups**, ten senior and eleven junior, have been installed at FLI (Appendix 1). Two junior groups followed appointments elsewhere in 2007. Except for the size of their basic budgets and personnel, no distinction is made between the different groups. Currently, most of the research groups contribute to more than one of the current research subtopics of the two research programmes. The groups are designated after their head scientists. The subtopics and the work of the individual research groups are described in brief below:

Research Programme “Mechanisms of Aging and Senescence”

Subtopic “Longevity”: The laboratories of Cellarino, Englert and Platzer have joined to identify life span determinants in a new vertebrate model organism, *Nothobranchius furzeri*. In parallel, a large scale gene association study with human longevity is pursued using DNA from centenarians and younger control subjects.

The **subtopic “Destabilisation of the Genome”** (laboratories of Diekmann, Görlach, Greulich, Grosse, Herrlich, Platzer, Wang) covers processes whose dysfunction affects genome integrity and causes cellular senescence as well as premature aging of the organism.

Research Programme “Age-associated Diseases”

Subtopic “Neurodegeneration”: FLI has chosen to explore some of the most important pathways whose disturbance leads to pathologies of aging. Neural cells appear to be most sensitive to various insults including destabilisation of the genome. The laboratories of Cellarino, Fändrich, Görlach, Heuer, Herrlich, Kaether, Morrison, Schilling, Than, Wang and Weih address different aspects of neuronal dysfunction including molecular processes leading to Alzheimer’s Disease (AD), Myotonic Dystrophy and Huntington’s Disease. Also ex-

explored are the impact of thyroid hormone on neuronal function, the mechanism of neurodegeneration associated with DNA repair defects, the role of NF- κ B in neurodegeneration and neuroprotection, and Ras signalling in neurons.

Subtopic “Metabolic Syndrome” (Bauer, Calkhoven, Heuer, Tuckermann, Weih): Age-related impairment of the control of energy homeostasis increases the risk for a complex series of consequences, from type 2 diabetes through atherosclerosis to high blood pressure, heart failure and stroke. The groups associated in the so-called “metabolic club” study in particular the central hypothalamic control of energy expenditure, nutritional control of gene expression, and aspects of atherosclerosis.

Subtopic “Impaired Tissue Homeostasis”: Aging goes along with various types of organ dysfunction and reduced ability to regenerate. The FLI laboratories of Englert, Platzer, Tuckermann and Weih focus selectively on aging-related bone metabolism, kidney homeostasis and hormonal control of bone marrow stem cells.

The **subtopic “Genomic Variability”** assembles efforts by the groups of Cellerino, Platzer, Sühnel and Wilhelm to relate genetic polymorphisms to aging and disease phenotypes, both in humans and in model organisms.

Subtopic “Cancer” (Calkhoven, Englert, Görlach, Herrlich, Morrison, Platzer, Ploubidou, Than): Despite the large number of participants only a few very specific questions are pursued in the area of cancer research: the role of the cytoskeleton in cancer signalling/carcinogenesis, the role of genomic copy number variations in cancer, and the function of tumour suppressor genes (WT1; Nf2).

Research Groups

- The **Cellerino Laboratory** (junior group) specialises in research on determinants of lifespan, mainly by analysing the short-lived vertebrate model *Nothobranchius furzeri*. The group has established that this short-lived fish develops an array of aging pathologies similar to those which affect higher vertebrates and that the onset of age-related pathologies can be retarded by the drug Resveratrol. Part of the future research will focus on the identification of other drugs that retard the aging process of *Nothobranchius* (subtopic “Neurogeneration”). *Nothobranchius* strains collected from different locations in Mozambique vary in their median and maximum lifespan, differences that are genetically determined. Therefore, a major effort is directed towards identifying the genetic loci responsible for these differences (subtopics “Longevity” and “Genomic Variability”).
- The **Calkhoven Laboratory** (junior group) studies the regulation of gene expression relevant to nutrient and energy metabolism, metabolic disorders (subtopic “Metabolic Syndrome”) and cell proliferation. The group has generated a C/EBP β transcription-factor mouse model for the study of metabolic disorders and cancer (subtopic “Cancer”), and discovered a novel nutrient signalling pathway that regulates C/EBP mRNA-translation (subtopic “Metabolic Syndrome”). The group showed how inhibition of mTOR-regulated C/EBP expression might be used in cancer therapy (subtopic “Cancer”). A translation control reporter system was developed for semi-quantitative analysis of regulated translation.
- The **Diekmann Laboratory** (senior group) focuses on the analysis of chromosome segregation and the role of PML (Promyelocytic leukemia nuclear) bodies in the nucleus. Systematically, all centromere / kinetochore proteins and the major PML nuclear body components have been tagged so that their assembly dynamics can be followed by high resolution live cell mi-

scopy in normal and stressed cells. Failure in proper assembly leads to chromosome instability, relevant for cancerogenesis and the aging process. PML bodies appear to be titration sites for specific nuclear proteins relevant for genomic stability (subtopic "Destabilisation of the Genome").

- The **Englert Laboratory** (senior group) focuses on kidney and gonad development as well as on kidney homeostasis (subtopic "Impaired Tissue Homeostasis"). One of the key players in these processes is the transcription factor WT-1; the elucidation of its role during organogenesis and cancer are central projects of the group (subtopic "Cancer"). Moreover, since zebrafish serves as one of the model organisms for work on kidney development, the Englert lab is familiar with the advantages of using fish species for research and is in charge of developing methods for genetic manipulation of the lifespan model *Nothobranchius furzeri*. According to FLI, this model will become important once interesting genes have been identified which are likely to influence lifespan (subtopic "Longevity").
- The **Görlach Laboratory** (senior group) employs NMR spectroscopy in liquid and solid state in order to elucidate the structural basis of biomolecular interactions related to aging and disease development. The group established the first structure of high-risk papilloma virus oncoprotein E7 and its interaction with CDKI p21WAF (subtopic "Cancer"). For the oncogenic Hepatitis B Virus, the structure of an RNA signal structure essential for viral mRNA export was solved (subtopic "Cancer"). Another of the group's subjects of interest is the structure and regulation of methionine sulfoxide reductases, one of the proteins able to repair oxidatively damaged protein (subtopic "Destabilisation of the Genome"). In addition, the group addresses the structure of b-amyloid oligomers and the conformation of a triplet repeat expansion causing myotonic dystrophy, the latter requiring the development of solid-state NMR methods (subtopic "Neurodegeneration"). The group also cooperates with other FLI groups on papilloma virus oncoproteins and the DNA repair enzyme aprataxin.
- The **Greulich Laboratory** (senior group) introduced laser technologies into the analysis of DNA repair and has been successful in resolving the spatial and temporal features of early DNA double strand break repair (subtopic "Destabilisation of the Genome"). Within the group's laboratory, one activity that used to be carried out by the former Unger Research Group is pursued at the institute: cargo transport along microtubuli. Furthermore, in a recent project, data mining has been used to identify gene expression patterns common to human cancer, to aging and to stress.
- The **Grosse Laboratory** (senior group) dissects the importance of DNA repair, recombination and replication for genome stability and aging based predominantly on a biochemical approach. The current main topics of the laboratory are the role of helicases in preventing illegitimate recombination (human deficiencies in helicases result in premature aging), the regulation of the initiation step during human DNA replication, and the regulation of p53 function (subtopic "Destabilisation of the Genome").
- The **Herrlich Laboratory** (senior group) has extensive experience in cancer cell biology and gene regulation. Over the last few years, their work has concentrated on the function of a so-called adhesion molecule, the type 1 transmembrane glycoprotein CD44. The gene is extensively alternatively spliced which is, as the group has shown, subjected to Ras dependent signalling. The group discovered that certain splice variants act as co-receptors for receptor tyrosine kinases, are responsible for activating these receptors, and catalyse signal transduction to the small G proteins. Based on the co-receptor function, CD44 promotes tumour

metastasis formation (subtopic "Cancer"). The regulation of the cleavage of CD44 by gamma secretase and its physiological significance is also studied (subtopic "Neurodegeneration"). Other cancer-related projects address the role of an intracellular focal adhesion and nuclear platform molecule, Trip6, and, in cooperation with the Ploubidou laboratory, the activation of Rac and Cdc42 by viral oncoproteins. Through the subgroup of E. Fritz, the laboratory is also involved in the subtopic "Destabilisation of the Genome". The group discovered mammalian Topoisomerase III alpha and its functional relevance to radiation sensitivity. The current focus lies in the molecular causes for individual human radiosensitivity.

- The **Heuer Laboratory** (junior group) is interested in the role of thyroid hormone in establishing and maintaining brain function. The experimental approach towards understanding thyroid function in the brain originates from the observation of a human hereditary disorder. Affected patients suffer from severe form of psychomotor retardation due to inactivating mutations in the thyroid hormone transporter MCT8. The group recognised that MCT8 is critical for the uptake of the active thyroid hormone T3 into the brain (subtopic "Neurodegeneration"). In addition, MCT8-deficient mice exhibit pronounced alterations in hepatic and renal metabolism indicating the importance of the hormone transporter for proper thyroid hormone action. Future plans are to define the neuronal alterations in response to adult-onset hypothyroidism and to investigate whether thyroid hormone treatment is beneficial for neuronal survival following focal cerebral ischemia. Another goal of the group is to uncover the molecular mechanisms by which the hypothalamus-pituitary-thyroid axis is linked to central circuits regulating body weight and food intake. For these project mice mutants are analysed that are resistant to diet induced obesity and diet-induced type 2 diabetes (subtopic "Metabolic Syndrome").
- The special area of interest of the **Kaether Laboratory** (junior group) is membrane trafficking of proteins involved in Alzheimer's disease. (subtopic "Neurodegeneration") The group identified a novel quality control mechanism of multisubunit protein function which regulates at the level of the endoplasmic reticulum the proper assembly of, for example, the complexes of gamma-secretase which is relevant for Alzheimer's disease, and also for other complexes. The group also works on the anti-aging hormone Klotho and on Notch signalling in the brain.
- The two main areas of interest of the **Morrison Laboratory** (junior group) are the regulation of Ras and Ras-like proteins in physiological and pathophysiological situations, such as cancer development (subtopic "Cancer") and signal transduction in neurons (subtopic "Neurodegeneration"). The group has identified the phosphatase (MYPT-1-PP1) activating the tumour suppressor protein merlin during contact inhibition of growth. MYPT-1-PP1 and its substrate merlin form a tumour suppressor cascade targeting Ras that was previously unknown.
- The **Platzer Laboratory** (senior group) has been the main German contributor to the International Human and Dictyostelium Genome projects. The group's laboratory is instrumental for numerous activities at FLI. The search for disease-related and age-related genomic variability including epigenetic differences is now the major goal of the group (subtopic "Genomic Variability"). Within the subtopic "Longevity" it focuses on the analysis of the *Nothobranchius* genome and of DNA variations in centenarians. Comparative analysis of telomere maintenance in dictyostelids contributes to the understanding of mechanisms destabilising the genome. The group has found copy number variations as well as alternative and aberrant splicing related to cancer and impaired tissue homeostasis (inflammation) (subtopics "Cancer" and "Impaired tissue Homeostasis").

- The **Ploubidou Laboratory** (junior group) addresses cytoskeletal signalling in mitosis and transformation, and, in particular, cytoskeletal function and dysfunction in the pathogenesis of virus-induced human cancer. The group identified a vaccinia protein that blocks the microtubule nucleation capacity of centrosomes in tumour cells followed by cell division arrest, and it is mapping the signalling pathway that controls this event. Cytoskeletal events in early cellular transformation are analysed, which are caused specifically by the expression of high-risk but not low-risk HPV oncoproteins E6 & E7. The signalling pathways that modulate this process are being dissected using tandem affinity purification and RNAi approaches. The group took on the task of setting up a high content screening unit at FLI, for genome-wide RNAi screens and high-throughput image-based analysis of disease-associated and aging-related signalling pathways (subtopic "Cancer").
- The leader of the **Schilling Laboratory** (junior group), Gabriele Schilling, brought to FLI her expertise on the topic of Huntington's disease, which leads to neurodegeneration in middle to old age. Using transgenic mouse models for Huntington's disease expressing the first 171 amino acids of human huntingtin (htt) comprising the Q stretch that determines htt aggregation, the group discovered an N-terminal truncation site around position 120. Mice with 82 Q, but not those with 18 or 44 Q, develop a neural phenotype and premature death around three to six months. A cleavage closest to the Q tract is likely to release a protein fragment more prone to rapid aggregation and to be more toxic than longer fragments. The group is now attempting to identify the protease responsible for the fragmentation at position 120, and to create htt mutants of the cleavage site and thus resistant to cleavage. These mutants will be expressed in mice. The ultimate goal is to contribute to discovering a possible form of therapy (subtopic "Neurodegeneration").
- The **Sühnel Laboratory** (senior group) focuses on bioinformatics and collaborates with other research groups of FLI in various ways, contributes thus to several subtopics, predominantly however to "Genomic Variability". The group leader, Jürgen Sühnel, was actively involved in the establishment of the Jena Centre for Bioinformatics. The group has developed freely available web resources for structural biology (JenaLib: Jena Library of Biological Macromolecules) and for comparative genomics of prokaryotes (SGB: Spirochetes Genome Browser; JPGV: Jena Prokaryotic Genome Viewer). A new genome browser type that encodes the nucleic acid sequence by conformational and thermodynamic dinucleotide properties is being developed. High-level quantum-chemical studies have contributed to a better understanding of DNA tetraplex structures. The development of COMBO-FISH methods allows the exact labelling of genetic elements and is being further improved to selectively silence genes by RNAi-like methods. The definition and analysis of mitosis models has been used to design experiments with the objective of investigating regular and altered mitotic behaviour.
- The **Than Laboratory** (junior group) is in charge of the FLI protein crystallography laboratory. Its general interest is to understand the structure function relationship of proteins relevant to aging and age-related diseases such as Alzheimer's disease and cancer (subtopics "Neurodegeneration" and "Cancer"). The group leader has extensive past experience in the structure of pro-protein and pro-hormone processing proteases (PCs), such as Furin, which are vital for cancer progression and metastasis. Further ongoing projects focus on the Amyloid Precursor Protein (APP), its physiological interaction partners and transmembrane proteolysis. The long-term goal will be to design small molecule inhibitors based on structural information. At the same time, the group collaborates with numerous other FLI labs on different topics.

- The **Tuckermann Laboratory** (junior group) studies the function of steroid hormones and their receptors – nuclear hormone receptors – in inflammation, tissue integrity and metabolism (subtopics “Impaired Tissue Homeostasis” and “Metabolic Syndrome”). By utilising function-selective mutations of the glucocorticoid receptor (GR) in mice the group could determine the contribution of the dimerisation of the GR in macrophages for steroid therapy of contact allergy. Furthermore they demonstrated the requirement of the GR in osteoblasts for GR induced osteoporosis. For this process the dimerisation is dispensable. Other activities of the group are an attempt to define the hormonal regulation of stem cell renewal through the stem cell niche and the differentiation of adipocytes. Future goals are to explore hormonal control of the metabolic syndrome and inflammation-associated cancer
- The **Wang Laboratory** (senior group) discovered the causal role of Nbs1, the gene defective in the human hereditary disorder Nijmegen Breakage Syndrome (NBS), in branching DNA repair pathways and in neurological and immunological defects of human genomic instability syndromes. The group explores, in addition, the functions of poly-ADP-ribose polymerase and poly-ADP-ribose glycosylase in DNA repair, cell cycle progression, carcinogenesis and aging (subtopic “Destabilisation of the Genome”). Through the work on Nbs1, the group also makes a major contribution to the subtopic “Neurodegeneration”. According to FLI, the group was one of the major and active laboratories in the world to employ recombinant mouse technologies to study DNA damage signalling and repair. It collaborates with several of the FLI groups in creating conditional knock-out and knock-in mouse mutant strains.
- The **Weih Laboratory** (senior group) has characterised what is known as the alternative NF- κ B pathway and discovered its essential role in the formation of secondary lymphoid organs. The group found that constitutive activation of the alternative NF- κ B pathway causes severe changes in B cell lymphopoiesis and spleen architecture. Mice lacking RelB (the transcription factor addressed by the alternative pathway) develop thymic atrophy and autoimmunity (subtopic “Tissue Homeostasis”). The group’s work on the immune system is also relevant for other diseases of the aging individual. The group found that lymphotoxin- β -receptor signalling promotes tertiary lymphoid organogenesis in the aorta adventitia of aged apoE-/-mice, a model for atherosclerosis (subtopic “Metabolic Syndrome”). In addition, the group explores the role of NF- κ B in neurodegeneration and neuroprotection in a mouse model of optic nerve injury (subtopic “Neurodegeneration”).
- The **Fändrich Laboratory** (junior group until December 2007) has been interested mainly in structural aspects of amyloid aggregates, the functional consequences of amyloid deposits, and the toxicity of amyloids. The group developed a conformation-specific antibody for the pathological form of Alzheimer’s plaque and studied the interaction of Alzheimer fibrils with the plasma membrane. Cryo-electron microscopy data was generated which made it possible to establish a structural fibril model (subtopic “Neurodegeneration”).
- The achievements of the **Wilhelm Laboratory** (junior group until May 2007) include a new approach for large-scale analyses of posttranscriptional expression regulation, identification of new patterns in the genetic code, a new approach for identifying and analysing statistically significant substructures in unordered data sets with applications to protein complex and transcription factor binding site data in yeast, identification of new patterns in gene regulation, and a new quantification of robustness in cellular metabolic networks (subtopic “Genomic Variability”).

National Interest, Standing in the Scientific Community, Future Development

According to FLI, research on the molecular basis of aging is one of the major unresolved scientific challenges in biomedical science. The institute sees the current knowledge level as being still in its infancy, but given the current demographic development with an increasing life expectancy in the human population, FLI deems further research to be timely and of huge **national public interest**. So far, substantial efforts to boost this type of research on aging have been made in the United States and the United Kingdom. The institute emphasises that FLI is the first national institute with the explicit theme "Molecular age research". As research on aging is timely, the institute expects other institutions to also enter this field of research in the future.

In the opinion of FLI, its long-term mission can only be successfully accomplished in an institution devoted specifically to this mission. The essential features to be met in the institute are strong in-house interdisciplinary cooperation and the availability of numerous facilities required for the chosen biomedical research themes. Such facilities are, for example, high-quality imaging equipment, protein analysis with mass spectrometry, an animal house and equipment for the genetic manipulation of mice, a sequencing pipeline with the latest multichannel sequencing, NMR and crystallography equipment, as well as electron microscopy. According to the institute, these needs required for its mission can only be met at a **non-university institute**. However, FLI stresses that it considers itself at the same time to be a "nucleus" that provides a research focus for the neighbouring university and institutions beyond. Within this context, several joint projects carried out by the Friedrich Schiller University of Jena (FSU) and FLI have already been established, and a further enhancement of the links to FSU, particularly with the medical faculty of the university, is defined as one of the institute's key aims for the forthcoming years.

As FLI is the first institute of age research in Germany, a **national comparison** with other similar research institutions is not yet possible. The Max Planck Society (MPG) is currently establishing a Max Planck Institute for the Biology of Aging in Cologne. At an early stage, the intentions of MPG and FLI were discussed in order to avoid unnecessary overlaps between the two institutes. It was agreed that the new Max Planck Institute would analyse primarily the regulation of lifespan while FLI was to focus more on the pathology of aging. At present, in addition to several important areas of disease, FLI has begun work on a new lifespan model not planned for the MPI, and has obtained a unique position in DNA double strand repair. On an international scale, age research is performed at several institutes, for example, the Spanish National Cancer Centre (CNIO) in Madrid, Spain, the Institute for Biomedical Aging Research (IBA) in Innsbruck, Austria, the Erasmus University Rotterdam, the Netherlands, the University of Newcastle upon Tyne, England, the National Institute of Aging (NIA) in Bethesda, United States, as well as the Buck Institute for Age Research in Novato, United States. According to FLI, each institution has chosen a different major focus of research, and therefore there is little formal overlap. In the opinion of FLI, a fair **international comparison** is difficult at present because the institute is a newcomer in the field. However, FLI considers its international visibility, for example, in bioinformatics and genome analysis, to already be significant. In the prospective international competition, FLI expects to be a strong competitor but at the same time to develop its own unique profile, for instance, with its own lifespan project, which is based on the short-lived fish model organism *Nothobranchius furzeri* that no other aging research institute has chosen and which should yield insights that cannot be obtained elsewhere. Success in the scientific competition will also rely on the long-standing expertise in genome sequencing and analysis, and a recently installed high-throughput RNAi library screening system for age-related features. In addition, FLI rates its location in Jena as advantageous since many different ex-

perimental research institutes working in the field of Life Sciences and some start-up centres are assembled at the Beutenberg Campus in Jena. According to FLI, this cluster creates a valuable interdisciplinary research atmosphere. Furthermore, the medical faculty of FSU has chosen aging research as one of their focus points, and the institute rates this aspect as very favourable for its planned forthcoming interactions.

According to the institute, the constellation of a team of researchers whose combined expertise and research interests directed towards the mission are not to be found elsewhere is one of the **key strengths** of FLI. According to the institute the assets comprise the substantial expertise in genome analysis, the nationally unique research on genome instability and DNA repair, and on the lifespan research model *Nothobranchius furzeri*. Other assets are the in-house availability of structural biology and of animal models for disease and lifespan research as well as the expertise in recombinant transgene technology. In addition, FLI's own expertise is complemented by comparable activities of the medical faculty in Jena, and the institute rates this combination as unique in age research. Regarding the structure of the institute, FLI values its flat hierarchical organisation, its lean management set-up and its mix of junior and senior scientists as favourable for an interactive and efficient research environment. A further major organisational strength of FLI is the promotion and achievement of in-house coherence which is beginning to show in shared publications and joint funding applications by different research groups. These in-house interactions are fostered by various measures, for instance, by joint seminar series, an annual retreat of the institute, and the shared use of all available facilities and equipment. An institute with a new research direction must have **weaknesses**, ranging from still missing expertise to the need of further improvement of scientific excellence. As a current weakness of FLI, the institute identifies its current space limitation. Particularly the limitations of the animal facilities and a common space for the infrastructure confine the institute's scope for raising additional external funds, since no additional laboratory space can be offered. According to FLI, this weakness will be remedied in the year 2010 when the new research building of the institute is to be completed.

For the **future development** of FLI, a successor for the current Scientific Director has already been selected by an international search committee. The new director designate, to start early in 2009, is an expert in human premature aging syndromes with special expertise in the research area of genomic instability. Under his leadership, FLI will continue to strive towards its overall prospective goal of gaining a key international position in the field of age research. The institute is confident that, within a five to seven-year period, it will make major progress in its key research areas. For example, the institute aims to define the genetic determinants of lifespan in the fish species *Nothobranchius furzeri*. These results should provide some insight into the fundamental question of whether aging and lifespan limitations are stochastic processes or driven by a "genetic clock". Furthermore, the institute plans to expand its cooperation with two human subject collections of very old-age families in Leiden, the Netherlands, and Odense, Denmark, as the study of human centenarians yields valuable genetic information. Additionally, FLI rates human syndromes of premature aging as another valuable source of genetic information to be further investigated. Within this research topic, the institute will focus mainly on replication stress and DNA double strand break repair, alterations which cause chromosome instability syndromes in humans with severe developmental and/or progeroid consequences. The mechanisms of neurodegeneration and neuroregeneration will be another major part of FLI's current and future activities, as neural disease and/or neurodegeneration result from several processes linked to aging, e. g. genome instability syndromes, hormone dysregulation,

inbuilt genetic errors, and detrimental immune reactions upon neural injury. For future enhancements of the institute's structure, a few shortcomings have been identified that still exist and need to be remedied in order to achieve the expected major sustained success. In addition to the existing set-up, FLI proposes to increase the number of junior groups. The institute stresses the importance of its junior groups for boosting the vitality of FLI and for creating an atmosphere where a drive for research success is paramount. In the opinion of the institute, the future ratio of junior groups to senior groups should become closer to 2:1, in order to maintain and enhance a lively and competitive institute. From a scientific point of view, additional expertise in the field of stem cell aging, telomere function, epigenetics and neural regeneration is considered to be needed at the institute, and four additional junior groups could be installed to fill these gaps. For the future, FLI also aims to enhance its links to clinical medicine to support the development of medical applications based on the institute's research findings. A drafted proposal on this topic attempts to combine the needs of the institute with a unique model of clinician-scientist education.

3. Cooperation

FLI has cooperated with many national and international university and industrial partners.

Since 1992, cooperation between FLI and the **Friedrich Schiller University of Jena** has been agreed upon by contract. The cooperation agreement mainly refers to joint appointments of professors and teaching activities of FLI scientists at the FSU. The institute's director plus six other heads of FLI senior research groups have been appointed as joint professors together with FSU. By contract, 16 units per week per semester (*Semesterwochenstunden*, SWS) is the combined obligatory teaching load for all jointly appointed professors, but according to the institute, the teaching activities, for mutual benefit, often go far beyond the officially agreed commitment. In total, 32 FLI scientists were involved in teaching during the 2005-2007 reporting period. The teaching work amounts to 2.4 SWS per scientist on average. Through participation in the biochemical and biomedical curricula, FLI staff contributes to the basic and advanced education of Jena students. Additionally, six research groups of the institute are partners within the DFG Collaborative Research Centre 604 (*Sonderforschungsbereich*, SFB) "Multifunctional Signalling Proteins", which is guided by a member of the FSU as spokesperson. Furthermore, several FLI research groups were instrumental in establishing the Jena Centre for Bioinformatics (JCB) funded by the BMBF. According to FLI, productive collaborations have been fostered with numerous FSU departments such as the Centre for Electron Microscopy on structural analysis of amyloid fibrils, the Center of Molecular Biomedicine on protein tyrosine phosphatase regulation as well as Ras signalling, the Institute of Physiology on assembly of inner kinetochore proteins in live cells, and others. FLI also supports FSU in various ways, again to their mutual benefit, for example, by joint funding of the Centre for Electron Microscopy, the free-of-charge use of NMR machinery and of the animal house. As a future project, FLI and FSU, together, have recently proposed the foundation of a new German national centre of neurodegenerative diseases.

On the Beutenberg Campus, cooperation with the neighbouring **Leibniz Institute for Natural Product Research and Infection Biology e. V. – Hans-Knöll-Institute** (HKI) is realised on various levels, from organisational matters to research. In the recent past, ten research projects with eight different HKI laboratories have been pursued, for instance, on protein-protein interactions with several proteins of FLI's programme, on Alzheimer's plaque specific antibodies, on

sequencing of a pathogenic dermatophyte genome, and others. The latter is part of a joint project with the HKI funded within the framework of the competitive budget allocation process of the Leibniz-Gemeinschaft (*SAW-Verfahren der Leibniz-Gemeinschaft*) within the framework of the Pact for Research and Innovation (PAKT).

The institute also participates in common activities of the various research institutions located on the Beutenberg Campus such as methods and technology transfer workshops, collaboration on soft skills for the graduate schools, and the public lectures of renowned scientists on the campus ("Noble Talks"). So far, scientific collaborations with other research institutions located on the Beutenberg Campus have led to publications with the Max Planck Institute for Chemical Ecology, the Institute of Photonic Technology and the SIRS-Lab GmbH.

Students of the **University of Applied Sciences Jena** (*Fachhochschule Jena*) participate in courses offered by FLI and are accepted as diploma and PhD students in compliance with the rules of FSU's School of Biology and Pharmacy.

According to the institute, numerous **collaborations with other research institutions** in Germany, Europe and the United States of America have been established by the various research groups of FLI. For example, one FLI research group was member of the EU Research Training Network "Functional analysis of the AP-1 complex: using animal and cellular models to examine its roles in development, cancer and diseases", and another research group is involved in the EU project "Expressed Sequence Tags of Toxic Algae (ESTTAL)". The institute also participates in the National Genome Research Network. For the future, FLI plans further promotion of a *Nothobranchius furzeri* Information Network (NFIN).

As a research institute devoted to basic science, FLI carries out only limited **research cooperation with industry**. The current Scientific Director co-founded the G2M Cancer Drugs AG, Frankfurt / Main, prior to his move to Jena. Presently, active co-operation contracts exist, among others, with Serono GmbH, Unterschleißheim, Analytik Jena AG, GlaxoSmithKline GmbH & Co. KG, Munich, and Bristol-Myers Squibb GmbH & Co. KGaA, Munich. In addition, FLI has agreements on confidentiality with several other partners in industry.

In the evaluation period from 2005 to 2007, 91 **guest scientists** spent time at FLI (Appendix 2). The majority of the guest scientists came from Germany (48 %), different parts of Europe (26 %) and Asia (19 %). The guests were supported by the German Academic Exchange Service (DAAD), the BMBF and the TKM, among others. 44 guest scientists stayed longer than three months, 38 visited FLI for one week to three months and nine for less than one week. In the same period, 24 scientists from FLI visited other institutes in Germany, different parts of Europe, and North America. One of them stayed for more than three months, five for one week to three months and 18 for less than one week.

4. Research Results

Propagation of the institute's research results is realised, inter alia, by publications in scientific journals, papers at international conferences and workshops, expert activities, institutional brochures, as well as presentations to the general public.

In the report period 2005 to 2007, on average 94 **publications** with FLI scientists as coauthors were published per year. 85 of these articles appeared in peer-reviewed scientific journals (Appendix 3). In 2005 to 2007, the total number of publications per FLI scientist and year was on average 1.1, with approximately 1.0 peer-reviewed publication per scientist and year

(Appendix 5). FLI emphasises that the institute's research results are published as original articles in international journals whenever possible. In agreement with proposals by the Scientific Advisory Board, preference is given to complete reports in high-ranking journals over more frequent, shorter reports. In addition, scientists are urged to present and discuss their recent findings at appropriate international meetings and conferences. According to FLI, the quality of the institute's publications is promoted indirectly by the institutional bonus system for external funds obtained, as research groups with a good publication record are more likely to obtain competitive funds. In the view of FLI, the Leibniz Graduate School on Aging and Age-Related Diseases (LGSA), founded in the autumn of 2006, with its strict selection process of new PhD projects and its improved standard of educational training of PhD students has indirectly contributed to the improvement of the quality of the institute's publications.

In addition to its publications, FLI has developed a number of frequently used **databases**: the Jena Library of Biological Macromolecules (JenaLib), the Jena Prokaryotic Genome Viewer (JPGV), the Spirochetes Genome Browser (SGB), the Enterobacteria Genome Browser (en-gene), and the Xanthomonas Genome Browser (XGB). The genome browsers aim at an improved and accelerated annotation and analysis of different genomes with an emphasis on genome comparison. Furthermore, FLI has taken the very first steps to set up a database for aging research. For this database, the goal is using text-mining and information-extraction approaches to combine molecular and cellular biology data with information on aging and senescence in general, and on age-related diseases in particular.

As an institution conducting basic research, FLI does not provide pure **service** or service products, neither to scientific nor to commercial entities. However, it does provide service support to several Beutenberg Campus and FSU institutes within the framework of the institute's various research cooperation projects.

The **knowledge transfer** of FLI occurs in various ways. Individual FLI scientists were or are engaged as scientific advisory board members for the Centre for Molecular Biology of the University of Heidelberg (ZMBH) and the Helmholtz Zentrum München – German Research Center for Environmental Health (formerly: *Forschungszentrum für Umwelt und Gesundheit*, GSF), as member of the board of trustees of the Boehringer Ingelheim Fonds, as deputy chairman or members of DFG study sections, and in other similar positions. In addition, the institute's work has been presented at several events attended by politicians, and one of FLI's scientists has been engaged in the German "*Arbeitskreis Strahlenschutz*". Two members of FLI were involved in founding the *Verbund Biomedizinische Forschung Jena e. V.* (VBMF), an open association of Jena-based biomedical research institutions. VBMF serves as a platform for supporting biomedical research by improving inter-institutional interactions on shared research topics or shared methodologies.

Since his recruitment in 2003, a Scientific Coordinator has been responsible for all aspects of **public relation activities** of FLI. Particular target groups, such as research institutions, the Ministry of Thuringia and the media, are informed about the work of the institute by means of the distribution of an institutional brochure. The media, in addition, are informed of recent findings through press releases that are fed into the national science information service as well as sent directly to relevant media personnel. The institute is presented to the broader public through coverage in newspapers, TV and radio reports and through the institute's website. Furthermore, FLI regularly participates in "Science Days" and "Science Nights" ("*Lange Nacht der Wissenschaften*"), and it also contributes to local exhibitions. In addition, a formal forum for the discussion of social and economic aspects of an aging society has been initiated by FLI in 2008.

Since 2006, all aspects of FLI's **technology transfer** have been managed by the scientific coordinator in close cooperation with Ascenion GmbH, Munich, a national intellectual property asset management company specialising in life sciences. The cooperation is funded through a BMBF grant within Germany's "Hightech Strategy". According to FLI, its technology transfer strategy involves strict portfolio screening and termination of weak patents, thus reducing patenting costs. In parallel, new research findings are validated prior to publication and patent protection is initiated. As an alternative to patent applications, valuable research tools generated by FLI are commercialised without necessarily filing a patent. Furthermore, FLI promotes business start-ups by employees of the institute, for example, by organising technology transfer seminars in accordance with the regulations formulated by the Leibniz-Gemeinschaft. While four biotech companies were founded between the years 1999 and 2002 by former and present members of the institute, no other company has been launched since then. According to the institute, this development has been caused by the shift from a more application-oriented research institution to the current institution for age research. For patent management FLI has reduced annual expenses and generated modest income, recently (Appendix 4).

From 2005 to 2007, the institute was actively involved in organising a series of **scientific events**. Among other events, members of FLI organised together with various partners two colloquia of the *Verbund Biomedizinische Forschung Jena e. V.*, three workshops and meetings within the framework of the DFG-SFB 604 "Multifunctional Signalling Proteins", a biannual meeting of the "DNA Repair Network", as well as the Spetses International Summer School 2007 in Greece.

Several members of FLI staff have national and international **positions and functions of importance** in scientific advisory boards (SAB), as reviewers for the DFG, the BMBF, and international funding agencies. For example, one scientist of the institute serves, inter alia, on the panel of the United States-Israel Binational Science Foundation as well as the Ernst Schering Foundation, one scientist is a member of the Biofuture competition programme of the BMBF, and another one is chairman of the SAB of the ZMBH as well as the SAB of the GSF. FLI members of staff also work as reviewers for numerous international institutions and funding agencies, and as members of various university search committees.

Several members of the institute have received scientific **awards and honours** during the last few years. One scientist was awarded the *Thüringer Forschungspreis 2006*, another one the Young Scientists Award 2006 of the *Gesellschaft für Umwelt-Mutationsforschung e. V. (GUM)*. Two members of FLI were winners of the BioFuture competition prize in 2000 and 2003, respectively. In 2006, FLI research work focusing on laser micro-dissection and pressure catapulting was nominated for the Future Award of the German Federal President (*Bundespräsident*).

5. Promotion of Junior Academics and Non-academic Staff

Between 2005 and 2007, 48 Diploma theses, 21 PhD theses, and 4 postdoctoral lecturing qualifications (*Habilitationen*) were carried out at FLI (Appendix 6). The number of supervised qualifications per FLI scientist per year ranged between 0.1 and 1.0 (institute average 0.2 to 0.3; Appendix 5). The new groups do not show up in the statistics, yet. In this three-year period, one third (16 out of 48) of the diploma and master students published their work in international journals, seven of these as first authors. In the same time period, the completed PhD theses contributed to 56 publications. On the reporting date, 0.95 doctoral candidates per scientists (all together 76) were supervised at FLI.

With the new Leibniz Graduate School on Aging and Age-Related Diseases (LGSA) in 2006, a **structured PhD programme** was introduced at the institute. Features of this programme, which is valid for all PhD students at FLI, are a competitive institutional screening of proposed new LGSA research projects, a three-member thesis committee for every PhD student, which meets at least once a year, a special LGSA lecture series, obligatory participation in weekly work-in-progress seminars and journal clubs, topical work-in-progress seminars and soft skill training. In addition, PhD students are actively encouraged by the institute to visit international conferences and summer schools, and they all participate in the institute's annual retreat. Advanced PhD students must attend and present their work at international meetings. Initial PhD contracts are for one year; an extension to three years is the rule but requires a vote by the thesis committee. An extension to a fourth year requires a strong argument by the thesis committee, for example, completion of work for a major publication.

In order to foster the independent development of PhD students as scientists as well as their feeling of corporate identity, a student assembly was formed, student representatives were elected, and a member of the institute's faculty was elected as Dean of Students. As the weekly work-in-progress seminars of FLI are mandatory for all scientists, the institute rates this event series also as a contribution to the communication and communal spirit of all the members of the institute. For the seminar series, PhD students are encouraged to invite external speakers of their choice.

The postdoctoral scientists of FLI are organised in a postdoc club with an elected speaker. According to FLI, this club has become a valuable body of proposals for the improvement of in-house procedures. For further enhancements, the institute is currently working on the implementation of a **mentoring programme for postdocs**.

Furthermore, FLI has established a **"Fellow" programme** to accept exceptionally excellent young scientists who have just finished their PhD or their first-year postdoc period, but are not ready to compete for junior research group leader, yet. The candidates must come from outside and will be selected based on their performance as a PhD student or postdoc and on the research project submitted. Once enrolled in the programme, they are given independence with personnel and financial support. One of the established group leaders will act as the fellow's mentor. The fellows may compete for full group leader status at FLI within three years.

At the beginning of 2008, FLI hosted nine **junior research groups**. Each group has been established with a contract for six years and a possible extension for another three years subject to very good evaluation. Tenure of the group leader is possible in exceptional cases and depends on evaluation by a review committee installed by the Scientific Advisory Board (SAB) of FLI, and on approval by the SAB and FLI's Board of Trustees. The junior groups are evaluated at the end of the fourth year, in order to permit reasonable time for planning either continued support or termination. According to FLI, progress of the work in junior groups is under particular attention by the SAB as well as by the Scientific Director. The institute states that the junior research groups are very actively involved in creating a functional institute. For example, one of the junior group leaders acts as Dean of Students, they organise histology as well as microscope user groups, and contribute in many other ways to a stimulating working atmosphere.

The institute is also engaged in the **vocational training of non-academic staff**. At present, FLI educates trainees for biology technicians (*Biologielaboranten*) as well as trainees for administration (*Bürokauffmann/-frau*). At the reporting date, five vocational trainees were employed by the institute (Appendix 10). The institute offers all trainees a limited contract after their graduation.

In addition to the promotion of junior academics and the vocational training of non-academic staff, FLI is supporting the further education of all its employees by various measures. For example, training courses in cell biology are organised for the technical staff to accomplish state-of-the-art cell culture handling, to be able to avoid contaminants and to allow quality control of the cultures handled. FLI also supports the idea of cooperative training for the technical and administrative staff being introduced at the Beutenberg Campus for all residing research institutes.

6. Institution Structure and Management

The institute is a non-profit institution with the legal form of a registered association (*eingetragener Verein, e. V.*). The bodies of the association are the Members Assembly, the Board of Trustees, the Board of Directors, the Assembly of Research Group Leaders, the Scientific Council and the Scientific Advisory Board.

The **Board of Directors** (*Vorstand*) represents the institute internally and externally and is responsible for all scientific and administrative matters. It consists of the Scientific Director and the Head of Administration. The Board of Directors acts in accordance with the advice given by the Board of Trustees and the Scientific Advisory Board. Within the Board of Directors, the **Scientific Director** (*Direktor*) has executive scientific responsibility for the institute. As part of this responsibility, the Director assigns the level of basic budget for each research group. The Director is appointed for a period of five years by the Board of Trustees; re-appointment is possible. The **Head of Administration** (*Kaufmännisch-administrativer Geschäftsführer*) is in charge of all administrative, legal and commercial tasks of the institute. The Head is appointed for a period of six years by the Board of Trustees; re-appointment is possible.

The **Scientific Advisory Board (SAB)** (*Wissenschaftlicher Beirat*) of FLI consists of six to twelve representatives from science or private industry. At least one member of the SAB represents the Friedrich Schiller University of Jena. All members are appointed for a period of four years by the Board of Trustees according to proposals by the SAB. A second term is possible. The responsibilities of the SAB include advising the Board of Trustees and the Board of Directors on all important scientific and organisational matters. It is also responsible for evaluating the institute's scientific work. The **Board of Trustees** (*Kuratorium*) consists of up to four internationally renowned representatives of science or private industry, a representative of the Friedrich Schiller University of Jena, the Chair and Deputy Chair of the Scientific Advisory Board, and up to two representatives of the regional and federal government respectively. The Board of Trustees decides on all fundamental issues of the institute, determines the guidelines for the institute's activities and oversees the Board of Directors. The **Members Assembly** (*Mitgliederversammlung*) selects up to four members of the Board of Trustees. The Assembly decides on changes in the statutes of the institute and approves the activities of the Board of Directors. Members of the **Assembly of Research Group Leaders** (*Kollegiumsversammlung*) are the Board of Directors and all research group leaders. The members of the Assembly inform each other at regular intervals about their ongoing and planned research work. The Assembly decides on the institute's research programme and all relevant research work, cooperation projects, teaching activities, and usage of central facilities. Following a suggestion by the SAB, a **Scientific Council** was formed at FLI, consisting of four elected group leaders, two seniors and two juniors. The term of duty is for two years with exchange of two members per year. The Scientific Council meets with the Scientific Director about once every two weeks, discusses

scientific and organisational matters, and prepares items to be discussed at the Assembly of Research Group Leaders.

In early 2008, the **institution structure** of FLI consists of ten senior research groups as well as nine junior research groups (Appendix 1). The scientific personnel of FLI is supported by administrative staff, organised in units for finances and controlling, personnel, purchasing, as well as transport services and building maintenance.

The direction of individual research activity and the methodology used are predominantly in the hands of the research group leaders. All project contracts and grant applications have to be approved by the Scientific Director, however. In addition, convergence of overall **research planning** in line with the major FLI theme of aging research is strongly promoted by direct communication between the director and the group leaders, by regular weekly work-in-progress seminars mandatory for all FLI scientists and students, by the scientific annual retreats of FLI, as well as by joint editing of FLI concept and research reports. Recently, what are known as “chalk-talks” have been established as an additional instrument of research planning at the institute. For these talks, the research group leaders meet once every four to six weeks for an evening devoted exclusively to the discussion and design of future projects. The scientific management of FLI is further supported by a **scientific coordinator** and by part-time staff for public relations and for the graduate school. In addition, a number of in-house functions, for example, persons in charge of the organisation of the institute’s core facilities, a representative for disabled employees, as well as an equal opportunity representative, are carried out by different scientists of FLI.

To assure and improve the overall research quality of the institute, FLI uses different instruments of **quality management**: The publication of results in peer-reviewed journals is strongly encouraged, as it is valued as a reliable external instrument of quality control. Furthermore, the SAB initiates site visits of individual research groups by external experts selected by the Board. The results of site visits are evaluated by the Board and utilised for the SAB audits regarding the work of the institute. FLI also regards the external evaluation of its projects, for instance, as part of a DFG-SFB evaluation, to be an important measure of quality control. Within this context, the institute considers the review system as practised by the DFG to be superior to others within Germany. Internal quality management instruments of FLI include an ombudsman who gives advice on procedures of good scientific practice and is engaged in cases of conflict, a competitive internal review process for PhD projects and an internal performance-based structure for the allocation of resources (*Leistungsorientierte Mittelvergabe*, LOM). This allocation structure solely honours and supports successful grant applications by an augmentation of the grant award from institutional basic funding. In the institute’s opinion, such a bonus system encourages the pursuit of outside funding, while at the same time promoting the screening of projects and related publications for quality through an external review process. Within the LOM of FLI, grant awards from highly competitive external funds (e. g. DFG, NIH) are augmented by an additional 30 % of that grant award while other grants receive additional 15 % or 7.5 %. In the year 2007, € 614,000 were allotted to the research groups through the LOM, while the basic budget for all groups including administration and service amounted to € 1.6 million. FLI emphasises the fact that in 2004 all research group leaders agreed to reduce the basic group budgets for running costs to increase the available funds for augmenting successful external grants. According to FLI, this decision has led to a significant increase in the number of grant applications, and consequently to an increase in funds granted during the last few years.

7. Financial Resources and Use Thereof

In the reporting period 2005 to 2007, the institute's total **annual revenue** (including costs for construction) ranged between € 14.2 and 26.0 million (Appendix 8). On average, 85 % of the total revenue stemmed from basic institutional funding by the Federal Government and the German *Länder*, 14 % from third-party funding for research promotion and less than 1 % from FLI's economic activities and other income respectively. In the same period, on average 44 % of the **annual expenditure** was spent on personnel, 26 % on materials, 16 % on other investments and 14 % on construction work.

During the years 2005 to 2007, FLI received a total of between € 2.0 and 3.5 million per year from **third-party funding** for research promotion, its own economic activities and other sources of income, for example, revenues from services provided (Appendix 8 and 9). Of the third-party funding for research promotion, on average 60 % was granted by the German Federal Government, 1 % by the Thuringian regional government, 25 % by DFG, 5 % by the European Union, 3 % by foundations, 2 % by businesses and 5 % by other project funding agencies. Per FLI scientist, an average amount of € 31.7 thousand was received as total revenue from third-party resources (Appendix 5). In the opinion of the institute, applications for external funds are presently strongly encouraged by the institute's bonus system. However, to date, severe space limitations of FLI have restricted these activities. For the near future, FLI's objective is to increase the **future quota of external funds** to about 25 % of FLI's total revenue. External grants acquired from the DFG, which more than tripled between 2005 and 2007, are particularly important for FLI because of its mechanisms of competition for individual ideas and projects. Future efforts of the institute will therefore be concentrated mainly towards increasing the DFG portion of third-party funding. Revenue from economic activities accounts for less than 1 % of the total revenue. According to the institute, this shortcoming may be attributed to the new research direction of basic science at FLI, which is not directly linked to commercial success.

During the last three years, FLI has successfully acquired funding from a competitive grant programme within the framework of the **competitive allocation process of the Leibniz-Gemeinschaft** (*SAW-Verfahren der Leibniz-Gemeinschaft*) within the framework of the Pact for Research and Innovation (PAKT). In 2006/2007, € 620,000 were acquired for FLI's lifespan project and for the period 2006-2010 € 1.2 million were granted for the foundation of the Leibniz Graduate School on Aging and Age-related Diseases. Additional funds within the *SAW-Verfahren* were acquired for projects in cooperation with two other institutes of the Leibniz-Gemeinschaft.

In 2000, FLI introduced a **cost performance accounting system** (*Kosten-Leistungsrechnung*, KLR) as an internal management and control mechanism. After the subsequent introduction of the institute's first **Programme Budget** in the year 2006, the KLR was adjusted to the programme structure.

According to FLI, the anticipated budget requirements for operating the currently constructed new institute building as well as the expected running costs for additionally required personnel have only partly been incorporated into the **future ministerial budget planning** (*mittelfristige Finanzplanung*). Adjustments to the budget are requested by FLI for extension of the animal house and for the proposed expansion of the institute by four additional junior research groups. Within the institute's personnel budget, 39 of a total of 155 positions have been installed as a so-called *Sondertatbestand* in 2003 to support new personnel research requirements linked to the restructuring of the institute. 24 of these 39 positions are dedicated to scientific personnel.

For the future, FLI would like to see the *Sondertatbestand* positions included in the institute's regular staff appointment scheme (*Stellenplan*). Despite repeated announcements by the government authorities, flexibility of the total budget has still not been achieved and the staff appointment scheme of FLI is still fixed.

At present, the institute has six **buildings**; most of the laboratories are located in old GDR Academy of Sciences buildings. The first section of a new laboratory building, including an animal house, is under construction. The current old buildings have a total area (*Hauptnutzfläche*, HNF) of about 4,600 m², which includes 3,100 m² usable laboratory and office space. According to the institute, it became evident at the end of 2006 that the extra space to be gained from the first section of the new building was already insufficient due to an increase in personnel as a result of restructuring of the institute. Therefore, FLI's Board of Trustees, together with the relevant federal and regional ministries decided to immediately begin construction of the second section of the new laboratory building. The planned completion date is early 2010. In addition to the increased number of personnel and of research groups, the second section of the building will accommodate a new animal house for about 14,000 mice, a fish facility and various technical equipment. FLI annotates that after the move to the new building, the pre-existing laboratory buildings and the old GDR academy buildings of the institute will need to be upgraded and renovated.

The institute rates its current **technical equipment** as excellent. The current research focus and the organisational structure of FLI are supported by purpose-designed **facilities and equipment**. The mouse facility was set up in 2004 and is currently used by ten research groups. The facility houses exclusively genetically modified animals with a capacity of around 6,000 mice and is free from major pathogens. A platform to generate transgenic and knockout animals and to preserve mutant strains was set up. The mouse facility has the equipment necessary to monitor phenotypes associated with aging parameters and to measure the physiological changes of genetically modified mice. While the zebrafish facility of FLI, which is located provisionally in the administration wing of FLI, has a capacity for 3,000 animals, the facility for *Nothobranchius furzeri* provides space for 1,500 adult fish, temporarily housed in a container. In 2005, a research irradiator facility was installed at the institute for experimental irradiation of tissue culture samples and small laboratory animals with ionising gamma-rays. This facility is routinely used by up to eleven different FLI research groups. Furthermore, the institute has a histology facility for the analysis of animal models, a flow cytometry / cell sorting facility, a light microscopy and imaging facility as well as an electron microscope, a high content screening facility, a protein analysis platform, partially automated DNA sequencing pipelines for high-throughput genomic sequencing, equipment for crystallographic analyses, and three NMR spectrometers.

The **IT infrastructure** of FLI includes, inter alia, two Linux clusters and two multiprocessor computers for demanding computations. Numerous personal computers run with various operating systems, supported by a gigabit Ethernet fibre backbone and two wireless networks. The institute has broadband Internet access to the national X-WiN backbone operated by the *DFN-Verein (Verein zur Förderung eines Deutschen Forschungsnetzes e. V.)*. All FLI computer service staff are members of the various research groups, and central IT service is provided by three members of the Sühnel Research Group. According to the institute, this organisational approach ensures an IT service that suits users' needs better than one normally provided by a pure IT service group.

FLI does not run its own **library**, but instead supports a central library on the Beutenberg Campus managed by the Thuringian University and State Library (*Thüringer Universitäts- und Landesbibliothek*, ThULB). Since 2006, the number of FLI subscriptions for printed journals has been significantly reduced to a small number of high-ranking journals; these journals are paid by FLI, but housed at the ThULB's central campus library and available to all visitors. A much greater proportion of FLI's present subscriptions to the relevant journals and databases are for online access only. In addition, FLI scientists have access to all online journals and databases subscribed to by the ThULB or covered by the national publication licences funded by the DFG. This subscription and access policy has enabled FLI to benefit from budgetary savings. Regarding its future concept of scientific publication, the institute states that it supports the current open access movement, provided that highest quality standards are met.

8. Personnel

Major changes in the institute's personnel occurred after restructuring in 2003 with the subsequent appointment of three senior and ten junior faculty members. Due to the changed scientific demands of the new groups and their activities, the number of scientific personnel as well as support personnel increased to a total level of 257, on the reporting date, which amounts to roughly 209 full-time equivalents (Appendices 10 to 12). Among the **personnel** paid by basic institutional funding, 61 % (119 of 196.5) in total and 56 % of the academic and management staff (85 of 152, including 46 doctoral candidates) were employed on a temporary contract. 31 % (57.4 of 185) of all temporarily employed persons and 37 % of all doctoral candidates were financed by third-party funds. On the same reporting date, the proportion of contracts held by female scientific and management personnel was 45 % (69 of 152). About 44 % of the academic and management staff (without doctoral candidates) were aged 39 or younger, 25 % were 50 or older and 8 % (6 out of 79) were older than 59. Approximately 67 % of the personnel had worked at the institute for less than five years, and 13 % for over fifteen years.

For **medium-term human resources development**, FLI plans to expand the number of junior groups to a total of 15. According to the institute, this will not be possible with the existing pools of positions or external grants only. New funds for four junior group leader positions are required. In addition, FLI expects the number of PhD students to increase further in the near future, and the institute proposes a modest increase of the Annex budget from which PhD fellowships are supported. Furthermore, FLI claims that the upper limit of capacity of technical support and animal house personnel has been reached. As the mouse house is particularly important for research performed at FLI, the animal house staff need to be increased by eight additional positions in order to maintain a high quality service.

For the **appointment of qualified staff**, vacant positions are advertised depending on the type of position to be filled. Both the current Scientific Director and the director designate were identified by an external search committee. The director designate, who is expected to start at FLI in early 2009, will be appointed as joint professor with FSU Medical Faculty. Current junior faculty members were screened from a pool of applicants after advertising internationally and finally selected taking into account advice from members of the Scientific Advisory Board. Since the establishment of the Leibniz Graduate School on Aging and Age-Related Diseases, advertisements for open PhD positions are placed on various sites of the Internet (LGSA homepage, *Nature online*) and in several email newsletters, normally twice a year. Presentations of the institute on scientific congresses and fairs are also used to promote the recruitment of academic

staff. Candidates for doctoral theses are selected on the basis of written applications and personal interviews in accordance with LGSA procedures. Regarding the junior academic staff, it is FLI policy to restrict in-house tenure to the rare very successful young scientist, and this requires a positive external review and approval by the SAB and the Board of Trustees. Since the appointment of the current Scientific Director in 2003, no permanent contract has been given to scientists with the exception of two of the professors. Since the last evaluation, four academic members of the institute's staff have accepted professorships and two became group leaders at other research institutions.

As an **equal opportunities employer**, FLI actively supports the recruitment of female employees and encourages female scientists to pursue an academic career. In 2007, FLI signed an agreement with the TKM on the employment of women and on the implementation of all requirements stated in the *Ausführungsvereinbarung "Gleichstellung" (AV-Glei)* of the BLK⁴. In 2005, an equal opportunity representative was appointed at the institute. On the reporting date, 67 of the 69 females belonging to the academic and management personnel were employed on a temporary contract. Despite two attempts of recruitment, no female scientist has accepted a senior group leader position at FLI. Four out of nine junior group leaders are women. According to FLI, a number of activities to improve the situation for, but not only, female employees at the institute have been taken in the recent past. These include the possibility of part-time work, establishment of a mother-and-child room, current negotiations of support with a nearby kindergarten as well as the instalment of a "comeback fellowship" to facilitate the re-entry of scientists who have been on parental leave.

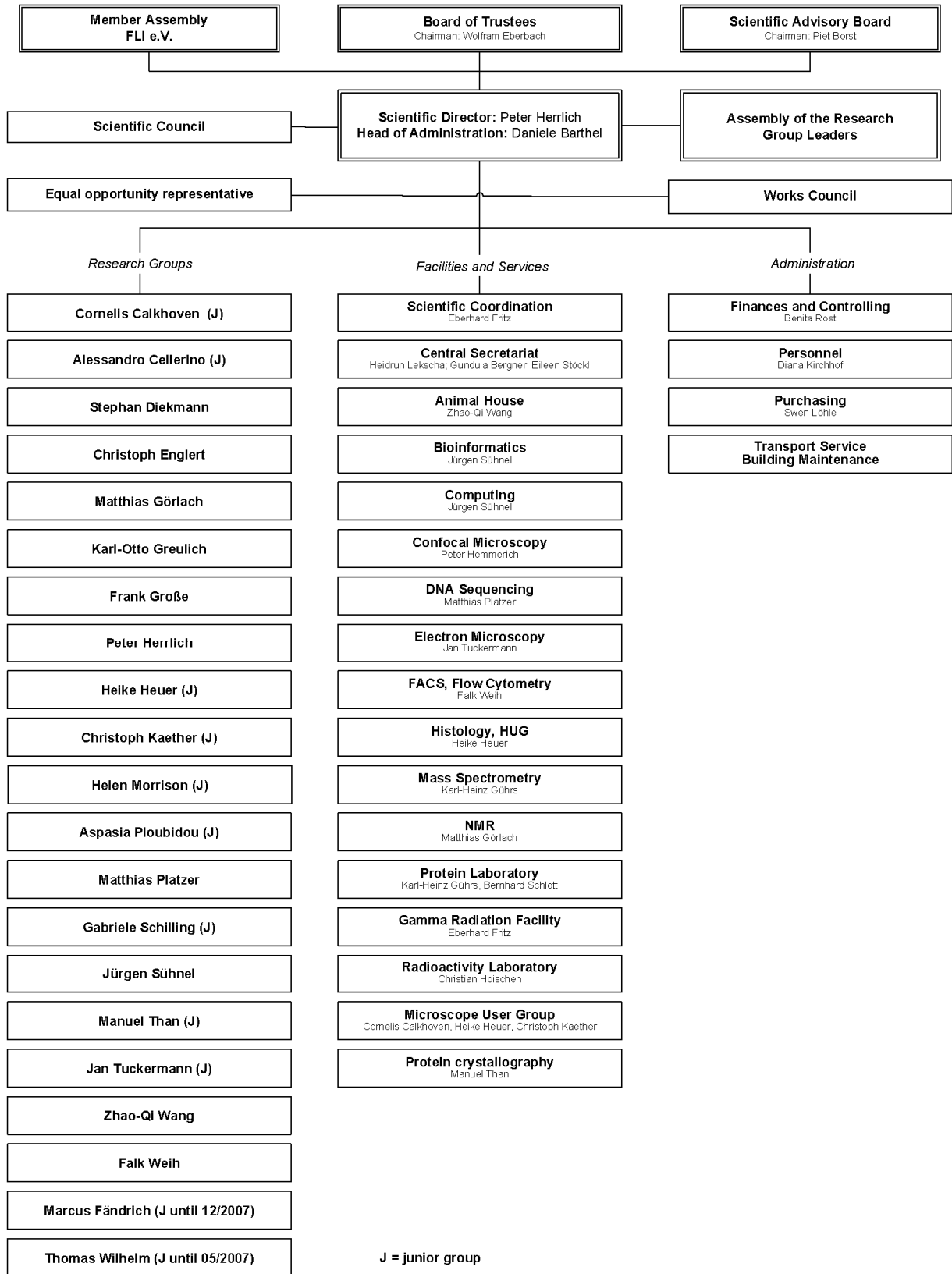
9. Implementation of the Recommendations from the Last Evaluation

After the last evaluation performed in 1999, the German Science Council (*Wissenschaftsrat*) indicated that the level of achievement of most research groups was good to very good, but heavily criticised the lack of a coherent concept and a low level of collaboration within the institute. In addition, the scientific output and the low level of external funding of some of the groups were both considered suboptimal. A lack of cooperation with the neighbouring Leibniz Institute for Natural Product Research and Infection Biology e. V. – Hans-Knöll-Institute (HKI) was also criticised. Since comprehensive restructuring was the prerequisite for further funding, the institute has been completely restructured in 2003/2004. Therefore, most of the detailed recommendations of the German Science Council regarding the scientific work and quality of the former institute have lost their significance. However, the Council's recommendations on structural improvements have been taken into account for the formation of the new institutional concept. According to FLI, the institute presently has a coherent thematic orientation of the whole institute and a flat hierarchy without any departments. In addition, the role of the Scientific Director has been strengthened, a new, more active Scientific Advisory Board has been established, and links with other institutions on the Beutenberg Campus in Jena have been increased.

⁴ Since 01.01.2008: *Gemeinsame Wissenschaftskonferenz (GWK)*

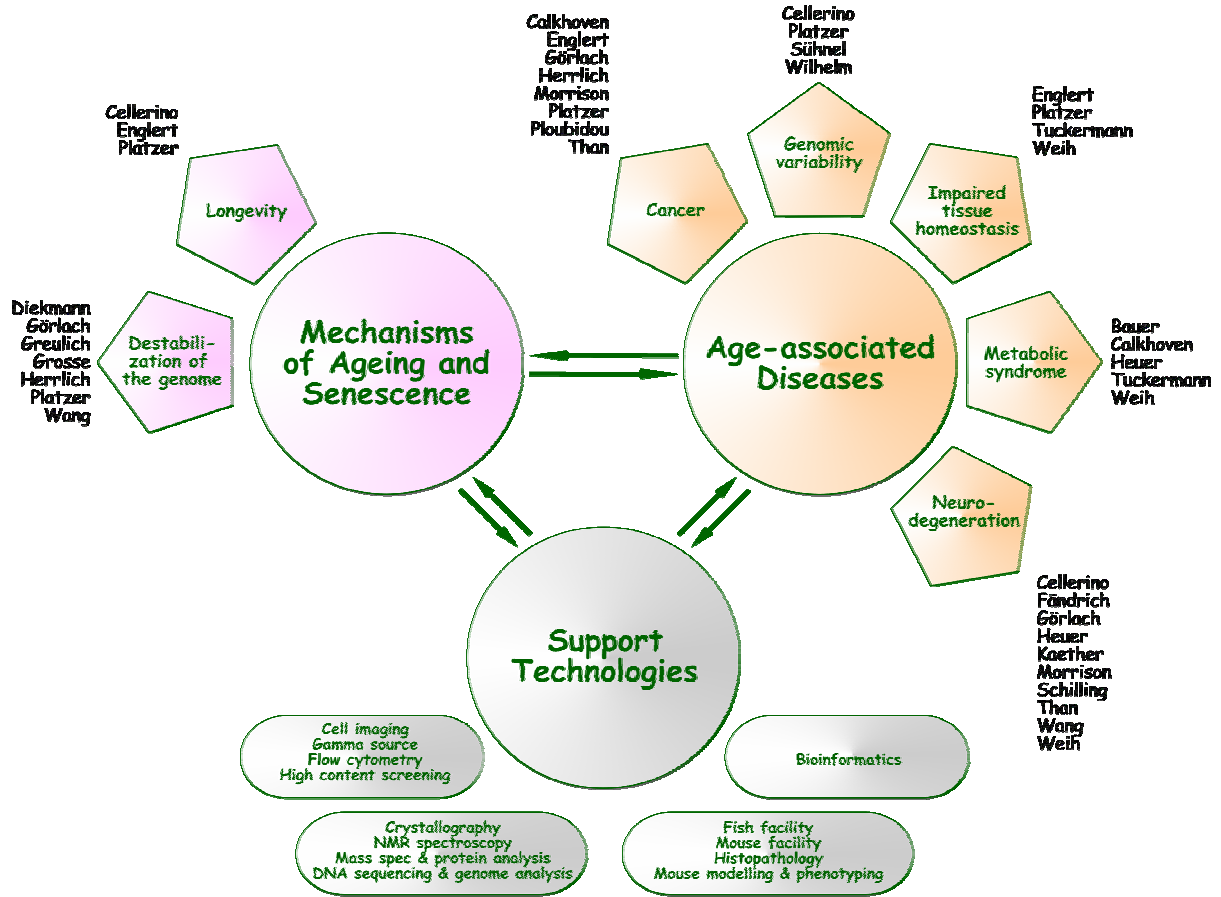
Appendix 1a

Organisation Chart



Appendix 1b

Overview of Research Organisation



(as of January 2008)

Appendix 2

Research Visits

– In the reporting period 2005 to 2007 –

Research visits to the institution

Guest's permanent place of employment	Duration of visit			Number of scholarship holders
	< 1 week	1 week to 3 months	> 3 months	
Total	9	38	44	33
Germany	4	11	29	14
Central /Eastern Europe	1	14	0	4
Western Europe	1	6	2	2
Africa	0	0	0	0
Asia	2	6	9	11
North America	1	1	4	2
South America	0	0	0	0
Australia, New Zealand	0	0	0	0

Visits by members of the institution to other institutions

	Duration of visit		
	< 1 week	1 week to 3 months	> 3 months
Total	18	5	1
Germany	15	1	0
Central /Eastern Europe	1	1	0
Western Europe	1	3	0
Africa	0	0	0
Asia	0	0	0
North America	1	0	1
South America	0	0	0
Australia, New Zealand	0	0	0

Appendix 3**Publications**– Total number and differentiated acc. to organisational unit¹ –

	2005	2006	2007
Total number of publications	89	95	98
1. Monographs (authorship)	0	0	1
2. Individual contributions to collected editions and series	6	9	3
3. Articles in peer-reviewed journals ²	79	84	93
4. Articles in other journals	3	2	1
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	1	0	0
Calkhoven Research Group (J, since 01/2005)	1	3	0
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	1	3	0
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Cellerino Research Group (J, since 12/2007)	-	-	3
1. Monographs (authorship)	-	-	0
2. Individual contributions to collected editions and series	-	-	0
3. Articles in peer-reviewed journals ²	-	-	3
4. Articles in other journals	-	-	0
5. Working and discussion papers ³	-	-	0
6. Editorialship (monographs, collected works)	-	-	0
Diekmann Research Group (since 11/1992)	5	8	6
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	1	1	0
3. Articles in peer-reviewed journals ²	3	7	6
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	1	0	0
Englert Research Group (since 05/2004)	3	4	4
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	3	4	4
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0

¹ Publications involving several organisational units are listed under all units involved. For the total number of publications, however, each publication is only counted once.

² Journals which use a review system that complies with the standards applicable in the given subject area

³ Provided these are published by the institute

	2005	2006	2007
Görlach Research Group (since 12/2004)	5	8	2
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	5	8	2
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Greulich Research Group (since 11/1992)	20	13	13
1. Monographs (authorship)	0	0	1
2. Individual contributions to collected editions and series	4	1	0
3. Articles in peer-reviewed journals ²	15	11	12
4. Articles in other journals	1	1	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Grosse Research Group (since 05/1995)	8	3	12
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	2
3. Articles in peer-reviewed journals ²	8	3	10
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Herrlich Research Group (since 10/2003)	6	1	4
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	6	1	4
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Heuer Research Group (J, since 11/2004)	3	1	4
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	3	1	4
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Kaether Research Group (J, since 09/2005)	1	4	2
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	1	4	2
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0

	2005	2006	2007
Morrison Research Group (J, since 12/2006)	-	1	2
1. Monographs (authorship)	-	0	0
2. Individual contributions to collected editions and series	-	0	0
3. Articles in peer-reviewed journals ²	-	1	2
4. Articles in other journals	-	0	0
5. Working and discussion papers ³	-	0	0
6. Editorialship (monographs, collected works)	-	0	0
Platzer Research Group (since 12/2004)	25	25	17
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	3	1
3. Articles in peer-reviewed journals ²	23	21	15
4. Articles in other journals	2	1	1
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Ploubidou Research Group (J, since 04/2005)	0	0	0
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	0	0	0
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Schilling Research Group (J, since 03/2005)	0	1	1
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	0	1	1
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Sühnel Research Group (since 01/1993)	8	3	6
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	1	1
3. Articles in peer-reviewed journals ²	8	2	5
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Than Research Group (J, since 09/2006)	-	3	1
1. Monographs (authorship)	-	0	0
2. Individual contributions to collected editions and series	-	0	0
3. Articles in peer-reviewed journals ²	-	3	1
4. Articles in other journals	-	0	0
5. Working and discussion papers ³	-	0	0
6. Editorialship (monographs, collected works)	-	0	0

	2005	2006	2007
Tuckermann Research Group (J, since 04/2004)	1	1	5
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	1	1	5
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Wang Research Group (since 02/2006)	-	9	8
1. Monographs (authorship)	-	0	0
2. Individual contributions to collected editions and series	-	0	0
3. Articles in peer-reviewed journals ²	-	9	8
4. Articles in other journals	-	0	0
5. Working and discussion papers ³	-	0	0
6. Editorialship (monographs, collected works)	-	0	0
Weih Research Group (since 05/2004)	1	2	3
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	1	0
3. Articles in peer-reviewed journals ²	1	1	3
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Fändrich Research Group (J, until 12/2007)	5	7	7
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	0	0	0
3. Articles in peer-reviewed journals ²	5	7	7
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0
Wilhelm Research Group (J, until 05/2007)	5	5	9
1. Monographs (authorship)	0	0	0
2. Individual contributions to collected editions and series	1	2	0
3. Articles in peer-reviewed journals ²	4	3	9
4. Articles in other journals	0	0	0
5. Working and discussion papers ³	0	0	0
6. Editorialship (monographs, collected works)	0	0	0

Appendix 4

Patents, Other Protection Rights and Licences

	Patents		Other protection rights		Licences ¹		Income ²		Expense ³	
	Germany	Abroad	Germany	Abroad	Germany	Abroad	Germany	Abroad	Germany	Abroad
Protection rights held in the past 7 years ⁴	10	9	0	0	0	0	4.2	0	8.7	7.7
Applications in the past 7 years	5 pending 4 granted	14 pending 3 granted	0	0	0	0	0	0	27.5 ⁵	111.3 ⁵

¹ Number of agreements

² From protection rights, total to be given in € 1,000

³ Total process costs incurred (no R&D costs), in € 1,000

⁴ Total number of patents, etc. active between 2001 and 2007, including such patents acquired before 2001 and such that have been given up in the reporting period

⁵ Including priority year

Appendix 5

Performance Record per Scientist¹ (Full-Time Equivalents)

– Differentiated acc. to organisational unit –

	Year	Number of scientists (full-time equivalents) ²	Number of peer-reviewed publications / scientist ³	Total number of publications / scientist	Competitively acquired third-party resources / scientist ^{4, 5, 6}	Total revenue from third-party resources / scientist ^{4, 7}	Number of supervised qualifications / scientist ⁸
Total	2005	70.2	1.1	1.3	28.2	28.4	0.3
	2006	85.7	1.0	1.1	34.2	34.3	0.2
	2007	101.6	0.9	1.0	33.7	33.8	0.3
Calkhoven Research Group (J, since 01/2005)	2005	2.5	0.4	0.4			0.4
	2006	2.6	1.1	1.1	4.2		
	2007	3.6			11.2		0.3
Cellerino Research Group (J, since 12/2007)	2005						
	2006						
	2007	0.2	17.7 ⁹	17.7 ⁹			
Diekmann Research Group (since 11/1992)	2005	4.3	0.7	1.2	7.5		0.5
	2006	5.2	1.3	1.5	7.5		0.2
	2007	5.1	1.2	1.2	6.3		1.0
Englert Research Group (since 05/2004)	2005	5.1	0.6	0.6	21.9		0.2
	2006	7.1	0.6	0.6	19.6		0.3
	2007	9.4	0.4	0.4	10.8		0.3

¹ Scientist financed by basic institutional funding or third-party resources, including the head of the research group, postdoctoral scientists, and Ph.D. candidates. Diploma students and guest scientists are not included.

² Annualised full-time equivalents (FTE) reduced for management representative activity according to Commissioner positions

³ Journals or other publication organs which use a review system that complies with the standards applicable in the given subject area

⁴ Third-party resources allocated competitively in acc. with a scientific review procedure (e. g. German Research Foundation (DFG), EU, Volkswagen Foundation)

⁵ In € 1,000

⁶ Spent in the given year

⁷ Research promotion funding from third parties, income from economic activity and other income (2. and 3. in acc. with Appendix 8)

⁸ Successful PhD theses, Diploma, *Magister* and Masters theses supervised by members of the institute

⁹ Partially related to former position

	Year	Number of scientists (full-time equivalents) ²	Number of peer-reviewed publications / scientist ³	Total number of publications / scientist	Competitively acquired third-party resources / scientist ^{4, 5, 6}	Total revenue from third-party resources / scientist ^{4, 7}	Number of supervised qualifications / scientist ⁸
Görlach	2005	5.5	0.9	0.9	26.6		0.7
Research Group (since 12/2004)	2006	6.5	1.2	1.2	25.7		0.3
	2007	5.9	0.3	0.3	26.3		0.2
Greulich	2005	6.7	2.2	3.0	16.7		0.5
Research Group (since 11/1992)	2006	6.0	1.8	2.2	26.4		0.5
	2007	6.2	1.9	2.1	23.5		0.5
Grosse	2005	6.8	1.2	1.2	7.1		1.0
Research Group (since 05/1995)	2006	5.2	0.6	0.6	7.9		0.8
	2007	5.4	1.9	2.2	11.2		0.9
Herrlich	2005	6.8	0.9	0.9	16.4		0.3
Research Group (since 10/2003)	2006	7.6	0.1	0.1	21.9		0.1
	2007	4.4	0.9	0.9	48.2		0.2
Heuer	2005	1.9	1.6	1.6	2.2		
Research Group (J, since 11/2004)	2006	2.6	0.4	0.4	6.7		
	2007	2.9	1.4	1.4			0.4
Kaether	2005	0.7	1.4	1.4			
Research Group (J, 09/2005)	2006	2.8	1.4	1.4	12.1		
	2007	3.5	0.6	0.6	21.4		
Morrison	2005						
Research Group (J, since 12/2006)	2006	0.4	2.4 ⁹		198.3		
	2007	5.0	0.4	0.4	23.4		
Platzer	2005	8.2	2.8	3.1	100.5		
Research Group (since 12/2004)	2006	10.4	2.0	2.4	125.2		
	2007	13.6	1.1	1.3	115.2		0.3
Ploubidou	2005	0.9					
Research Group (J, since 04/2005)	2006	2.2					
	2007	2.5					0.6
Schilling	2005	1.7					
Research Group (J, since 03/2005)	2006	2.3	0.4	0.4			
	2007	2.5	0.4	0.4			0.2

	Year	Number of scientists (full-time equivalents) ²	Number of peer-reviewed publications / scientist ³	Total number of publications / scientist	Competitively acquired third-party resources / scientist ^{4, 5, 6}	Total revenue from third-party resources / scientist ^{4, 7}	Number of supervised qualifications / scientist ⁸
Sühnel	2005	5.3	1.5	1.5	40.4		0.2
Research Group (since 01/1993)	2006	5.4	0.4	0.6	39.7		0.2
	2007	6.4	0.8	0.9	31.1		
Than	2005						
Research Group (J, since 09/2006)	2006	0.3	9.1 ⁹				
	2007	2.2	0.5	0.5	10.8		
Tuckermann	2005	2.5	0.4	0.4			
Research Group (J, since 04/2004)	2006	2.9	0.4	0.4			
	2007	4.4	1.1	1.1	16.2		
Wang	2005	0.1					
Research Group (since 02/2006)	2006	4.2	2.2	2.2	12.9		
	2007	7.5	1.1	1.1	13.0		
Weih	2005	4.3	0.2	0.2	6.8		0.2
Research Group (since 05/2004)	2006	4.9	0.2	0.4	18.6		
	2007	5.1	0.6	0.6	15.9		0.2
Fändrich	2005	3.7	1.3	1.3	50.0		0.3
Research Group (J, until 12/2007)	2006	4.0	1.8	1.8	55.0		0.3
	2007	4.6	1.5	1.5	55.5		0.4
Wilhelm	2005	3.3	1.2	1.5	50.8		
Research Group (J, until 05/2007)	2006	3.0	1.0	1.7	35.3		0.3
	2007	1.0	8.7	8.7	19.2		1.0

Appendix 6

Promotion of Junior Academics and Non-academic Staff

– Number of qualifications obtained and positively evaluated junior professors acc. to organisational unit (period 2005 to 2007) –

	Junior Professors ¹	Post-doctoral lecturing qualifications ²	Doctoral degrees ³	Diploma degrees ³	Vocational qualifications ⁴
Total	0	4	21	48	4
Calkhoven Research Group (J)	0	0	1	1	0
Cellerino Research Group (J)	0	0	0	0	0
Diekmann Research Group	0	0	4	4	0
Englert Research Group	0	0	2	4	0
Görlach Research Group	0	0	1	6	0
Greulich Research Group	0	0	2	7	0
Grosse Research Group	0	0	4	12	0
Herrlich Research Group	0	0	2	2	0
Heuer Research Group (J)	0	0	0	1	0
Kaether Research Group (J)	0	0	0	0	0
Morrison Research Group (J)	0	0	0	0	0
Platzer Research Group	0	2	0	4	0
Ploubidou Research Group (J)	0	0	0	1.5	0
Schilling Research Group (J)	0	0	0	0.5	0
Sühnel Research Group	0	0	1	1	0
Than Research Group (J)	0	1	0	0	0
Tuckermann Research Group (J)	0	0	0	0	0
Wang Research Group	0	0	0	0	0
Weih Research Group	0	0	1	1	0
Fändrich Research Group (J until 12/2007)	0	1	1	3	0
Wilhelm Research Group (J until 05/2007)	0	0	2	0	0

¹ Positively evaluated junior professors at the institute

² Post-doctoral lecturing qualifications (*Habilitationen*) obtained by members of the institute

³ Qualifications / degrees supervised by members of the institute

⁴ Trainees rotate during qualification

Appendix 7

Promotion of Junior Academics

– Number of candidates acc. to source of financing (as of reference day 31.12.2007) –

	Total number	Basic institutional funding^{1,2}	Third-party resources¹	Scholarships³, ancillary positions, etc.	Without remuneration
Junior professors ⁴	0	0	0	0	0
Post-doctoral lecturing candidates ²	2	2	0	0	0
Doctoral candidates ^{5,6}	76	45	27	1	3
Diploma students ⁵	16	0	0	0	16
<i>Magister</i> candidates ⁵	0	0	0	0	0
Masters candidates ⁵	0	0	0	0	0

¹ Persons who are paid in acc. with the German salary tariffs BAT IIa, BAT IIa/2, TVöD/TV-L EG 13, TVöD/TV-L EG 13/2 or higher

² Incl. competitively acquired basic institutional funding (*SAW-Verfahren*)

³ Scholarships incl. DAAD-Leibniz

⁴ Number of junior professors or post-doctoral lecturing candidates employed at the institute

⁵ Number of doctoral candidates, diploma students, etc. under the supervision of members of the institute

⁶ Incl. joint doctoral candidates at FSU (1 person = 0.25 full-time equivalent)

Appendix 8

Revenue and Expenditure¹
(in € 1,000)

Revenue		2005		2006		2007 ²	
1. Basic institutional funding			%		%		%
Total sum	12,180.1	85.6		15,630.2	83.9	22,554.0	86.6
1.1 Joint funding by Federal Government and German States (<i>Länder</i>) ³	12,180.1			15,630.2		22,554.0	
1.1. - Amount thereof obtained in competitive allocation process ("SAW-Verfahren")	0.0			299.9		545.0	
1.2 Other institutional funding ⁴	0.0			0.0		0.0	
1.3 Money granted from EU Structural Fund	0.0			0.0		0.0	
2. Third-party funding for research promotion⁵							
Total sum	1,978.4	13.9	% ⁶	2,929.5	15.7	3,426.8	13.2
Project funding from			% ⁶		% ⁶		% ⁶
2.1 German Research Foundation (DFG)	338.3	17.1		669.3	22.8	1,130.0	33.0
2.2 German Federal Government	1,465.7	74.1		1,821.5	62.2	1,500.0	43.8
2.3 German State(s)							
2.4 EU	61.9	3.1		148.6	5.1	200.0	5.8
2.4.1 <i>The total sum of managed EU funds</i>							
2.5 Foundations	21.7	1.1		75.5	2.6	180.0	5.3
2.6 Businesses	62.9	3.2		70.3	2.4	20.0	0.6
2.7 Other project funding	7.2	0.4		111.6	3.8	330.0	9.6
2.8 Funding managed by project partners	20.7	1.0		32.7	1.1	66.8	1.9
3. Income from economic activity							
Total sum	13.2	0.1		9.2	0.0	9.1	0.0
3.1 Commissions (private & public, incl. commissioned research)							
3.2 Licences, patent utilisation						4.1	
3.3 Publications							
3.4 Services	13.2			9.2		5.0	
4. Other income⁷	51.6	0.4		68.4	0.4	42.5	0.2
Budget	14,223.3	100.0		18,637.3	100.0	26,032.4	100.0
Expenditure							
Total sum	14,223.3			18,637.3		26,032.4	
5.1 Personnel	7,268.7			8,373.5		9,535.0	
5.2 Costs for materials	3,586.0			5,296.3		6,381.6	
5.3 Construction work ⁸	1,437.6			1,898.6		5,349.0	
5.4 Other investments ⁹	1,910.3			3,036.2		4,700.0	
5.5 Off-the-line items (<i>Sonderposten</i>)	0.0			0.0		0.0	
5.6 Allocation to reserves etc.	0.0			0.0		0.0	
5.7 Funding managed by project partners	20.7			32.7		66.8	
<i>Memo item: "DFG-Abgabe"</i> (German Research Foundation contribution)	0.0			0.0		187.0	

¹ Data for the report period, not including items in transit, etc.

² Preliminary values

³ Actual available resources, i.e. without German Research Foundation contribution (*DFG-Abgabe*), incl. transferable unspent budget balances, etc.; on the basis of the implementation agreement for research institutions (AV-FE)

⁴ Institutional funding not covered by the joint research funding from the German Government and the German States (*Länder*)

⁵ Incl. third-party funding managed by project partners (e. g. universities) but spent on the institute

⁶ Proportion (in %) of third-party funding for research promotion

⁷ Donations, membership fees, monies obtained from foundations for non-research-promotion purposes, etc.; withdrawal from reserves

⁸ Construction investments, multi-year construction maintenance work, land acquisition incl. vacating (*Freimachung*)

⁹ Large equipment

Appendix 9

Third-party Resources and Other Revenue¹

– Acc. to organisational unit (in € 1,000) –

	2005	2006	2007 ²
Total Sum	2,043.2	3,007.1	3,478.4
Third-party funding for research promotion	1,978.4	2,929.5	3,426.8
- German Research Foundation (DFG)	338.3	669.3	1,162.3
- German Government (<i>Bund</i>)	1,465.7	1,821.5	1,500.0
- German States (<i>Land / Länder</i>)	20.7	32.7	29.5
- EU project funds	61.9	148.6	200.0
- Foundations	21.7	75.5	180.0
- Businesses	62.9	70.3	20.0
- Other project funding	7.2	111.6	335.0
Income from economic activity³	13.2	9.2	9.1
- Services, commissions, licences, publications	13.2	9.2	9.1
Other income⁴	51.6	68.4	42.5
Institute⁵			
Third-party funding for research promotion	0.1	83.5	173.0
- German Research Foundation (DFG)	0.1	0.1	80.0
- German Government (<i>Bund</i>)	0.0	83.4	93.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Calkhoven Research Group (J, since 01/2005)			
Third-party funding for research promotion	0.0	10.9	40.0
- German Research Foundation (DFG)	0.0	10.9	40.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0

¹ Actual income spent in the given year acc. to funding source; not including items in transit, etc.

² Preliminary values

³ Services, patents and licences of former research groups

⁴ Donations, membership fees, monies obtained from foundations for non-research-promotion purposes (income from interest, disposal of equipment)

⁵ Institute income from BMBF (*Verwertungsoffensive Leibniz*) and DFG (*Programmpauschale, Beiträge Berufsgenossenschaft*)

	2005	2006	2007 ²
Cellerino Research Group (J, since 12/2007)			
Third-party funding for research promotion	-	-	0.0
- German Research Foundation (DFG)	-	-	0.0
- German Government (<i>Bund</i>)	-	-	0.0
- German States (<i>Land / Länder</i>)	-	-	0.0
- EU project funds	-	-	0.0
- Foundations	-	-	0.0
- Businesses	-	-	0.0
- Other project funding	-	-	0.0
Income from economic activity	-	-	0.0
- Services, commissions, licences, publications	-	-	0.0
Other income	-	-	0.0
Diekmann Research Group (since 11/1992)			
Third-party funding for research promotion	32.3	39.1	32.0
- German Research Foundation (DFG)	20.5	39.1	32.0
- German Government (<i>Bund</i>)	11.8	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Englert Research Group (since 05/2004)			
Third-party funding for research promotion	112.2	140.0	102.0
- German Research Foundation (DFG)	112.2	140.0	102.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Görlach Research Group (since 12/2004)			
Third-party funding for research promotion	145.4	167.0	156.0
- German Research Foundation (DFG)	27.3	51.4	95.0
- German Government (<i>Bund</i>)	118.1	115.6	61.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0

	2005	2006	2007 ²
Greulich Research Group (since 11/1992)			
Third-party funding for research promotion	111.7	159.4	146.4
- German Research Foundation (DFG)	0.0	0.0	7.9
- German Government (<i>Bund</i>)	1.0	0.0	0.0
- German States (<i>Land / Länder</i>)	20.7	32.7	29.5
- EU project funds	15.6	45.7	100.0
- Foundations	8.5	8.4	0.0
- Businesses	62.9	70.3	9.0
- Other project funding	3.0	2.3	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Grosse Research Group (since 05/1995)			
Third-party funding for research promotion	48.1	41.5	60.0
- German Research Foundation (DFG)	48.1	41.5	60.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Herrlich Research Group (since 10/2003)			
Third-party funding for research promotion	110.8	167.5	213.4
- German Research Foundation (DFG)	24.6	34.5	89.4
- German Government (<i>Bund</i>)	86.2	133.0	124.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Heuer Research Group (J, since 11/2004)			
Third-party funding for research promotion	4.2	17.2	0.0
- German Research Foundation (DFG)	0.0	0.0	0.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	4.2	17.2	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0

	2005	2006	2007 ²
Kaether Research Group (J, since 09/2005)			
Third-party funding for research promotion	0.0	34.2	75.0
- German Research Foundation (DFG)	0.0	34.2	70.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	5.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Morrison Research Group (J, since 12/2006)			
Third-party funding for research promotion	-	83.3	118.0
- German Research Foundation (DFG)	-	64.5	69.0
- German Government (<i>Bund</i>)	-	0.0	0.0
- German States (<i>Land / Länder</i>)	-	0.0	0.0
- EU project funds	-	0.0	0.0
- Foundations	-	18.8	49.0
- Businesses	-	0.0	0.0
- Other project funding	-	0.0	0.0
Income from economic activity	-	0.0	0.0
- Services, commissions, licences, publications	-	0.0	0.0
Other income	-	0.0	0.0
Platzer Research Group (since 12/2004)			
Third-party funding for research promotion	819.1	1,301.8	1,564.0
- German Research Foundation (DFG)	76.2	162.1	347.0
- German Government (<i>Bund</i>)	683.5	949.9	750.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	46.3	102.9	100.0
- Foundations	13.1	48.4	101.0
- Businesses	0.0	0.0	11.0
- Other project funding	0.0	38.5	255.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Ploubidou Research Group (J, since 04/2005)			
Third-party funding for research promotion	0.0	0.0	0.0
- German Research Foundation (DFG)	0.0	0.0	0.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0

	2005	2006	2007 ²
Schilling Research Group (J, since 03/2005)			
Third-party funding for research promotion	0.0	0.0	0.0
- German Research Foundation (DFG)	0.0	0.0	0.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Sühnel Research Group (since 01/1993)			
Third-party funding for research promotion	213.8	214.7	198.0
- German Research Foundation (DFG)	0.0	0.0	0.0
- German Government (<i>Bund</i>)	213.8	214.7	198.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Than Research Group (J, since 09/2006)			
Third-party funding for research promotion	-	0.0	24.0
- German Research Foundation (DFG)	-	0.0	24.0
- German Government (<i>Bund</i>)	-	0.0	0.0
- German States (<i>Land / Länder</i>)	-	0.0	0.0
- EU project funds	-	0.0	0.0
- Foundations	-	0.0	0.0
- Businesses	-	0.0	0.0
- Other project funding	-	0.0	0.0
Income from economic activity	-	0.0	0.0
- Services, commissions, licences, publications	-	0.0	0.0
Other income	-	0.0	0.0
Tuckermann Research Group (J, since 04/2004)			
Third-party funding for research promotion	0.0	0.0	72.0
- German Research Foundation (DFG)	0.0	0.0	65.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	7.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0

	2005	2006	2007 ²
Wang Research Group (since 02/2006)			
Third-party funding for research promotion	-	53.6	98.0
- German Research Foundation (DFG)	-	0.0	0.0
- German Government (<i>Bund</i>)	-	0.0	0.0
- German States (<i>Land / Länder</i>)	-	0.0	0.0
- EU project funds	-	0.0	0.0
- Foundations	-	0.0	23.0
- Businesses	-	0.0	0.0
- Other project funding	-	53.6	75.0
Income from economic activity	-	0.0	0.0
- Services, commissions, licences, publications	-	0.0	0.0
Other income	-	0.0	0.0
Weih Research Group (since 05/2004)			
Third-party funding for research promotion	29.0	90.9	81.0
- German Research Foundation (DFG)	29.0	90.9	81.0
- German Government (<i>Bund</i>)	0.0	0.0	0.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Fändrich Research Group (J, until 12/2007)			
Third-party funding for research promotion	186.5	218.8	254.0
- German Research Foundation (DFG)	0.3	0.0	0.0
- German Government (<i>Bund</i>)	186.2	218.8	254.0
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0
Wilhelm Research Group (J, until 05/2007)			
Third-party funding for research promotion	165.1	106.0	20.0
- German Research Foundation (DFG)	0.0	0.0	0.0
- German Government (<i>Bund</i>)	165.1 ⁶	106.0 ⁶	20.0 ⁶
- German States (<i>Land / Länder</i>)	0.0	0.0	0.0
- EU project funds	0.0	0.0	0.0
- Foundations	0.0	0.0	0.0
- Businesses	0.0	0.0	0.0
- Other project funding	0.0	0.0	0.0
Income from economic activity	0.0	0.0	0.0
- Services, commissions, licences, publications	0.0	0.0	0.0
Other income	0.0	0.0	0.0

⁶ Acquired by the Jena Centre for Bioinformatics (JCB)

Appendix 10

Employees¹

– In persons and as full-time equivalents (FTE); financed by basic institutional and third-party funding; as of reference day 31.12.2007 –

	FTE			Persons			Women			
	Total	Financed from third-party funding		Total	Financed from basic institutional funding, with limited employment contracts		Total		With limited contracts	
		Number	%		Number	%	Number	%	Number	% ²
Total	208.7	43.6	20.9	257	119	46.3	152	59.1	104	68.4
1. Academic and management staff	111.0	29.3	26.4	152	85	55.9	69	45.4	67	97.1
Salary acc. to										
- B4 and above; C4, W3	5.0	0.0	0.0	5	0	0.0	0	0.0	0	0.0
- B2, B3, C3, W2	2.0	0.0	0.0	2	0	0.0	0	0.0	0	0.0
- I / EG 15Ü	1.0	0.0	0.0	1	0	0.0	1	100.0	0	0.0
- Ia / EG 15	11.3	0.0	0.0	12	11	91.7	4	33.3	4	100.0
- Ib / EG 14	16.0	1.0	6.3	16	6	37.5	1	6.3	1	100.0
- IIa / EG 13	75.2	28.3	37.6	115	67	58.3	62	53.9	61	98.4
<i>of which doctoral candidates³</i>	35.5	13.0	36.6	73	46	63.0	45	61.6	45	100.0
- Dormant employment	0.5			1	1	100.0	1	100.0	1	100.0
2. Other staff	97.7	14.3	14.6	105	34	32.4	83	79.0	37	44.6
- Administration	16.9	-	-	18	-	-	-	-	-	-
- Library	0.0	-	-	0	-	-	-	-	-	-
- IT and statistics	7.5	-	-	8	-	-	-	-	-	-
- Laboratory	52.8	-	-	56	-	-	-	-	-	-
- Technology	7.0	-	-	8	-	-	-	-	-	-
- In-house services	5.0	-	-	5	-	-	-	-	-	-
- Vocational trainees	5.0	-	-	5	-	-	-	-	-	-
- Dormant employment	3.5			5						

¹ Employment acc. to BAT, TVöD or classification according to other pay and wage tariff schemes (e. g. for medical staff) for persons who are financed from institution resources (incl. vocational trainees and visiting scientists, provided they are paid from basic institutional funding or from third-party funding, etc., but not incl. internships (0), diploma students (16), ancillary staff (12), scientists without payment (7), PhD students without payment (3), and persons under other contracts for works and services (1)). In the case of joint appointments, persons whose salaries are reimbursed proportionately by the institute

² In relation to the number of women in the given category

³ Only doctoral candidates who have a BAT IIa, EG 13 or BAT IIa/2, EG 13/2 position or who are paid equivalently

Appendix 11

Employees acc. to Organisational Unit¹
 – Actual status; as of reference day 31.12.2007 –

	Total		Academic and management staff ²		Other staff, vocational trainees	
	FTE	Persons	FTE	Persons	FTE	Persons
Total	208.7	257	111.0	152	97.7	105
Scientific Director	5.5	5.5 ³	2.5	2.5 ³	3.0	3
Administration (incl. trainees) / Computing	18.4	20	1.0	1	17.4	19
In-house services	5.0	5	0.0	0	5.0	5
Animal house	8.0	8	0.0	0	8.0	8
Calkhoven Research Group (J)	5.0	7	4.0	6	1.0	1
Cellerino Research Group (J)	2.0	2	2.0	2	0.0	0
Diekmann Research Group	10.3	13.5 ³	6.0	9	4.3	4.5 ³
Englert Research Group	11.0	14	7.0	10	4.0	4
Görlach Research Group	10.2	13.5 ³	5.5	8	4.7	5.5 ³
Greulich Research Group	10.3	15	6.3	10	4.0	5
Grosse Research Group	10.0	12	6.5	8	3.5	4
Herrlich Research Group (and trainees)	10.8	13.5 ³	4.8	7.5 ³	6.0	6
Heuer Research Group (J)	4.8	7	2.8	5	2.0	2
Kaether Research Group (J)	4.5	6	3.5	5	1.0	1
Morrison Research Group (J)	6.1	8	5.3	7	0.9	1
Platzer Research Group	30.3	35	12.5	16	17.8	19
Ploubidou Research Group (J)	4.0	5	3.0	4	1.0	1
Schilling Research Group (J)	3.5	4	2.5	3	1.0	1
Sühnel Research Group	11.0	13	9.0	11	2.0	2
Than Research Group (J)	5.0	6	3.0	4	2.0	2
Tuckermann Research Group (J)	5.5	7	4.5	6	1.0	1
Wang Research Group	11.0	13	8.0	10	3.0	3
Weih Research Group	8.2	11	6.5	9	1.8	2
Fändrich Research Group (J until 12/2007)	3.5	5	3.5	5	0.0	0
LGSA employments at FSU	1.0	2	1.0	2	0.0	0
Dormant employments	4.0	6	0.5	1	3.5	5

¹ Persons who are financed from institute funding (incl. trainees and visiting scientists, provided they are paid from institute funding or from third-party funding, etc., but not incl. internships, diploma students, ancillary staff, and persons under other contracts for works and services)

² Employment positions equivalent to BAT IIa and above or TVöD/TV-L EG13 and above (incl. doctoral candidates with a BAT IIa or BAT IIa/2 position or an EG 13 or EG 13/2 position or an equivalent salary)

³ Decimals indicate individuals who belong to more than one organisational unit.

Appendix 12a

Academic and Management Staff¹

– Age and duration of employment acc. to organisational unit, as of reference day 31.12.2007 –

	Age groups in years									
	< 30		30 - 39		40 - 49		50 - 59		> 59	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Total	3	2	32	13	24	7	14	1	6	1
Scientific Director					1.5 ²	1			1	0
Administration, Computing					1	1			1 ³	1 ³
Calkhoven Research Group (J)					2	1				
Cellerino Research Group (J)			2	1						
Diekmann Research Group					2	0	1	0		
Englert Research Group			2	0	2	1				
Görlach Research Group					1	0	2	0		
Greulich Research Group							2	1	2	0
Grosse Research Group			1	0	1	0	3	0		
Herrlich Research Group (and trainees)			2	0	0.5 ²	0	1	0		
Heuer Research Group (J)			1	1					1	0
Kaether Research Group (J)			1	1	1	0				
Morrison Research Group (J)			4	2						
Platzer Research Group			3	1	4	1	2	0		
Ploubidou Research Group (J)			2	2						
Schilling Research Group (J)	1	1	1	1						
Sühnel Research Group			2	1	4	0	2	0	1	0
Than Research Group (J)			2	0						
Tuckermann Research Group (J)			2	1	1	1				
Wang Research Group	2	1	3	1			1	0		
Weih Research Group			3	1	2	1				
Fändrich Research Group (J until 12/07)			1	0	1	0				

¹ Number (persons) of BAT IIa, TVöD/TV-L EG 13 and above, not incl. doctoral candidates

² Decimals indicate individuals who belong to more than one organisational unit

³ Partial retirement

Appendix 12b

Academic and Management Staff¹

– Age and duration of employment acc. to organisational unit, as of reference day 31.12.2007 –

	Duration of employment at the institute or predecessor institution in years									
	< 5		5 - 9		10 - 14		15 - 20		> 20	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Total	53	19	7	3	9	1	10	1	0	0
Scientific Director	2.5 ²	1								
Administration, Computing	1	1			1 ³	1 ³				
Calkhoven Research Group (J)	2	1								
Cellerino Research Group (J)	2	1								
Diekmann Research Group					2	0	1	0		
Englert Research Group	3	0	1	1						
Görlach Research Group					3	0				
Greulich Research Group							4	1		
Grosse Research Group	2	0			1	0	2	0		
Herrlich Research Group (and trainees)	3.5 ²	0								
Heuer Research Group (J)	2	1								
Kaether Research Group (J)	2	1								
Morrison Research Group (J)	4	2								
Platzer Research Group	4	1	4	1	1	0				
Ploubidou Research Group (J)	2	2								
Schilling Research Group (J)	2	2								
Sühnel Research Group	4	0	1	1	1	0	3	0		
Than Research Group (J)	2	0								
Tuckermann Research Group (J)	3	2								
Wang Research Group	6	2								
Weih Research Group	5	2								
Fändrich Research Group (J until 12/2007)	1	0	1	0						

¹ Number (persons) of BAT IIa, TVöD/TV-L EG 13 and above, not incl. doctoral candidates

² Decimals indicate individuals who belong to more than one organisational unit

³ Partial retirement

Appendix 13

Documents Submitted by FLI

- Evaluation report of FLI according to the Evaluation Questionnaire for Institutions of the Leibniz-Gemeinschaft
- Comprehensive description of FLI research activities
- Proposal of FLI and FSU Medical Faculty for a Leibniz Research School for Clinician-Scientists - Centre for Research on Aging and Neurodegeneration
- Annual report 2006 (German and English versions), Programme Budget 2008
- Overview of research visits in 2005 – 2007, list of guest scientists and visits by FLI members to other institutions
- Agreement on cooperation between FSU and FLI (German version only)
- Overview of teaching courses offered by FLI staff in 2005 – 2007
- List of cooperation contracts and selected national and international cooperation projects
- List of publications, quantitative overview of publications, list of most important publications, list of joint publications by different FLI research groups (all 2005 – 2007)
- Overview of granted and pending patents
- Quantitative overview of performance record per scientist
- List of commissioner and administrative positions
- List of workshops and meetings organised by FLI, list of keynote lectures presented by members of FLI
- Quantitative overview and list of obtained qualifications of junior academics and non-academic staff, overview of junior academic candidates
- Procedures of the FLI Graduate School (LGSA), overview of FLI Technician Trainee Programme
- Organisation Chart of FLI (as of January 2008)
- Statute of FLI (German version only), FLI Rules of Good Scientific Practice
- List of members of the Scientific Advisory Board in 2003 – 2007, Reports by the Scientific Advisory Board 2005-2007
- Overview of revenue and expenditure, overview of third-party resources and other revenue (both 2005 – 2007), list of third-party funded research projects
- Overview of FLI employees and their affiliation to various organisational units (as of reference day 31.12.2005, 31.12.2006 and 31.12.2007, respectively)
- Overview of age groups and duration of employment of FLI's academic and Management Staff (as of reference day 31.12.2005, 31.12.2006 and 31.12.2007, respectively)
- List of traineeships, list of education and training measures
- Agreement of the TKM and FLI on the employment of women (German version only)
- FLI brochure "*Rättsel Altern*" (in German; English version provided during the visit of FLI)
- FLI application for a Comprehensive Centre of Research on Neurodegeneration of the Helmholtz Association in Jena (German version only)

Annex B: Evaluation Report

Leibniz Institute for Age Research – Fritz Lipmann Institute (FLI) Jena

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Enclosure: Members of the Evaluation Group and Guests; Representatives of Cooperating Partners

List of Abbreviations

DFG	German Research Foundation, Bonn
EMBL	European Molecular Biology Laboratory, Heidelberg
EU	European Union
FLI	Leibniz Institute for Age Research – Fritz Lipmann Institute
HKI	Leibniz Institute for Natural Product Research and Infection Biology e. V. – Hans Knöll Institute
IMB	Institute of Molecular Biotechnology
LGSA	Leibniz Graduate School on Aging and Age-Related Diseases
MD Programme	Medical Doctors Programme
NGFN	Nuclear Genome Research Network
NMR	Nuclear Magnetic Resonance

1. Summary: Evaluation and Significance of the Institute and Main Recommendations

The Leibniz Institute for Age Research – Fritz Lipmann Institute (FLI) concentrates on the study of the molecular mechanisms that control aging and lead to age-related diseases. This broadly-based field, which is currently a major social issue as well as being academically ambitious, became the conceptual focus of the institute after the current director was appointed on 1 October 2003. Until May 2005, it was still known as the Institute of Molecular Biotechnology (IMB); the change of name is indicative of the extent to which the focus of the research institution has shifted.

At the last evaluation of the institute in October 1999, which formed the basis for the German Science Council's scientific policy statement of 19 January 2001, it was considered necessary for the institute to introduce a coherent and sustainable research programme in coordination with the plans of the neighbouring institutions on the Beutenberg Campus in Jena. Furthermore, it was formulated that a director should be appointed with explicit authority to set goals and issue directives. The staff at the institute should be obliged to support the research and development concept. Furthermore, the Scientific Advisory Board should be far more actively involved in developing the institute and planning its future. Finally due to the criticism implicit in the recommendations, also the Free State of Thuringia set up a commission to support the refocusing and restructuring of the IMB. As a result, the appointment of the new director was announced at the end of 2003.

Against the backdrop of what was then a decidedly difficult situation, developments over the last four and a half years have been impressive. During this period a novel concept with convincing basic goals has been formulated and is gradually being put into practice. Given that it is such a hot topic, the new concept is facing national and international competition. It should, therefore, continue being honed and developed in future.

Over the last years very good scientific work is carried out at the FLI. Publications appear in seminal, internationally-reviewed journals. Some groups at FLI, however, have to increase their publication output. The amount of third-party fund-raising, particularly funding from the German Research Foundation (*Deutsche Forschungsgemeinschaft*, DFG), has increased considerably in comparison to the last evaluation. Notwithstanding this increase, the proportion of third-party funds in the overall FLI budget is not yet high enough. In principle the solid research going on these days at FLI allows to improve both the publication performance and increasing the proportion of third-party funds in the overall budget.

What is quite remarkable is the degree to which the institute has opened its doors internationally in the last few years, enhancing its appeal for younger scientists from home and abroad. This change has brought up a very open and intensive communication culture. In the area of doctoral training, particularly internationally-recruited junior researchers profit from the Leibniz Graduate School on Aging and Age-related Diseases (LGSA), which structures the doctoral educational phase convincingly. The composition of personnel in the nine junior research groups currently working at the FLI also reflects the opening up towards an international dimension.

The FLI now has a firm foothold on the Beutenberg Campus in Jena and has embarked on a lively joint exchange, which is making its mark on everyday research, with the neighbouring "Leibniz Institute for Natural Product Research and Infection Biology e. V. – Hans Knöll Institute" (HKI), Jena University and the Max Planck Institute for Chemical Ecology.

For the most research topics, the FLI is appropriately equipped. When the additional building which is currently under construction and due for completion in 2010, will be ready for use, the current space problems will be solved satisfactorily.

The FLI's scientific concept could not be implemented at a university institute which is obliged to cover a broader range of subjects. Similarly, a university would not be able to provide such comprehensive apparatus, space and personnel as the FLI's concept requires.

It can be summarised that the institute's refocusing approach has begun excellently and should continue to be finalised in the coming years. Particular attention should be paid to the following recommendations in the evaluation report:

On the concept and on scientific quality:

1. The concept of age research is still a rather new feature on the international research landscape. It is in the nature of things that, taken as a whole, the criteria for including or excluding certain issues and topics are currently also controversially discussed in academia. As the leadership and staff are aware, the FLI must play an active role in this process of developing a novel research field. This means that the FLI must remain open to and stay abreast of new developments in the relevant established disciplines on the one hand, while honing its own profile on the other so that it retains its singularity considering the increasing competition in this new research field from other newly established research institutes, such as the Max Planck Institute for the Biology of Aging in Cologne and the Helmholtz Centre for Neurodegenerative Diseases in Bonn. Given all the decisions to be made in connection with contents and personnel, achieving an effective balance is a difficult and challenging task. However, the FLI is well-equipped to deal with this task satisfactorily.
2. Particularly against this backdrop, which requires the FLI to sharpen its profile in the growing area of age research, it is understandable that the institute wants to intensify its links to clinical research in the context of developing its mission. The planned emphasis in the FLI's general concept on investigating age-related diseases, in particular the planned establishment of a Leibniz Research School for Clinician-Scientists, is therefore most welcome and should be pursued.
3. Bioinformatics, a technique that is becoming more important, should be applied at FLI more in the coming years. The FLI's idea "to set up a database for aging research" is basically worth pursuing, but is currently still in its infancy and the concept must be prepared more precisely and intensively. Working together with scientists from Jena University is a convincing approach.
4. It is necessary to improve publication performance in some working groups.

On cooperation:

5. The FLI's national and international contacts should be augmented. It is recommended that the FLI should increase the number of foreign visiting scientists financed by the institute. The number of FLI scientists visiting research institutions abroad should also be increased.

On facilities/equipment/administration:

6. On the whole, the present instalment, set up and combination of large equipment required for scientific investigations is almost appropriate. Scientifically well-founded arguments to upgrade the present NMR spectroscopy are supported. It is not only the FLI that benefits

from NMR spectroscopy, also other research institutions in Jena use the FLI NMR set up in terms of joint projects, as for example via the Collaborative Research Centre 604. Apart from NMR spectroscopy, it has been strongly suggested that the potential synergies of various research institutions in Jena might be exploited more intensively by joint acquisition of large equipment.

7. Automatic sequencing is important for most working groups at the FLI and should therefore be consolidated by the provision of adequate personnel.
8. The FLI's administration functions extremely effectively and efficiently. The FLI's growth in the last few years legitimates moderate expansion of the administration.

On the staffing situation:

9. The current director will soon be retiring and stepping back from this position. Ongoing negotiations to appoint a successor must be concluded quickly. The providers of funds are aware that it is essential to fill the position in spring 2009.
10. The FLI is planning to set up further junior research groups. This is a welcome development. Care should, however, be taken to ensure that the increase in the number of junior research groups should not introduce an imbalance in relation to the number of working groups already headed by established scientists.
11. In the medium term, attempts should be made to recruit younger research group leaders at the FLI.
12. The FLI should continue to make efforts to recruit female researchers to executive positions.
13. In order to make appropriate use of the upcoming infrastructure for keeping animals it will be necessary to increase the number of keepers significantly in future. Well-founded scientific arguments have been forwarded which justify eight further positions.

On basic funding and third-party funding:

14. It is remarkable to what extent third-party fund-raising has been increased in the last three years. However, in relation to basic funding the proportion of third-party funds is still too low. The proportion of third-party funds in the overall budget should be increased significantly in future. One of the ways of achieving this would be by utilising the funding opportunities offered by programmes at European level.
15. In order to enable a sound programme budget to be drawn up, the providers of funds should make budgeting more flexible. In particular, the possibility of carrying budget funds forward should be extended and the binding character of staffing schedule should be loosened in accordance with the Federal Government and the *Länder's* minimum requirements to be met by programme budgets.

2. General Research Concept, Main Work Programmes and Focus Areas

The FLI deals with a research area which is both scientifically novel and socially a burning issue. The interdisciplinary fusion of studies on aging and age-related diseases is still very new in international science. In this context, the research concept of the FLI being established in 2004 is ambitious and convincing. The concept is geared to basic research and brings together different subjects and topics from a broad field of life sciences. Properly justified, the concept will

essentially remain anchored in basic research in future, too, even if there is a greater emphasis on translational aspects in the clinical field.

It is in the nature of things that, taken as a whole, the criteria for including or excluding certain issues and topics are currently also controversially discussed in academia. As the leadership and staff are aware, the FLI must play an active role in this process of developing a novel research field. This means that the FLI must remain open to and keep abreast of developments in the relevant established disciplines on the one hand, while honing its own profile on the other so that it retains its singularity considering the increasing competition in this new research field from other newly established research institutions, such as the Max Planck Institute for the Biology of Aging in Cologne and the Helmholtz Centre for Neurodegenerative Diseases in Bonn. Given all the decisions to be made in connection with contents and personnel, achieving an effective balance is a difficult and challenging task. The FLI is well-equipped to deal with this task satisfactorily.

Particularly against this backdrop, which requires the FLI to sharpen its profile in the growing research area of age research, it is understandable that the institute wants to intensify its links to clinical research in the context of developing its mission. The planned emphasis in the FLI's general concept on investigating age-related diseases is therefore most welcome and should be pursued.

Bioinformatics, a technique that is becoming ever more important, should be applied at FLI more in the coming years. The FLI's idea "to set up a database for aging research" is basically worth pursuing, but is currently still in its infancy and the concept must be prepared more precisely and intensively. Working together with scientists from Jena University is a convincing approach.

The prerequisite for putting these recommendations into practice is that the FLI is organised as a non-university research institute. Given the extent of the apparatus, space and personnel required by such specific profiling, it could not be done at a university.

Both of the FLI's research programmes, "Mechanisms of Aging and Senescence", comprising two focus areas, and "Age-associated Diseases", comprising five focus areas, provide the contextual meeting point for a current total of nineteen research groups on a meso-level between the institute as a whole and the research groups. The research groups usually contribute to two or three focus areas respectively which leads to a convincing networking structure providing a wealth of opportunity for exchange and promoting coherence amongst the groups. Issues related to metabolism and metabolic syndromes, for example, are investigated by five research groups cooperating closely. The focus areas "Destabilisation of the Genome" and "Neurodegeneration" within the "Mechanisms of Aging and Senescence" research programme also bring together the most up to the minute and innovative issues from various groups. The other focus areas are also well-chosen and legitimated.

Apart from the research programmes with their focus areas, the FLI maintains infrastructures on a central level such as the animal house for laboratory mice, NMR spectroscopy, X-ray crystallography or central bioinformatics. These services are very well organised in a total of 13 sub-sections.

Due to the flat hierarchies at the FLI, the research groups were visited as units being individually assessed. The following statements refer to the ten senior research groups and the nine junior research groups.

On the ten senior research groups:

Diekmann Research Group: This group, working at the institute since 1992, has a very good publication record. They concentrate on method-oriented studies to quantify and visualise processes in cells, clearly prioritising aging issues. They make an important contribution to the focus area “Destabilisation of the Genome” and thus fit extremely well in the FLI’s general concept. The studies of laboratory animals planned in the immediate future are important and well-founded; the expansion of the animal facility will be of great benefit to the group.

Englert Research Group: Methodologically, this research group, set up at the FLI in May 2005, has managed to integrate itself successfully by jointly establishing an aging model system with the Cellerino and Platzer groups using the short living fish species, *Nothobranchius furzeri*. Their own studies on specific target genes have resulted already in good publications. The relevance of their own work to analyse aging processes should be highlighted more in future, for instance the impact of the work on kidney regeneration.

Görlach Research Group: The NMR group has been in existence at the institute since 1994 and a new head was appointed in December 2004. The group is responsible to facilitate NMR investigations. NMR is an exceptionally important technique, the use of which does not only benefit the FLI itself but also Jena University and particularly the Collaborative Research Centre 604, the HKI and other groups on the Beutenberg Campus in Jena. Considering the importance it is certainly necessary to upgrade the present NMR set up in time. Beside its service utility the group should concentrate research more towards aspects of aging. The group’s publication record is convincing.

Greulich Research Group: This research group has been working at the institute since November 1992 and provides extremely important, outstandingly proficient laser-micro technologies for numerous research groups at the FLI. As a result the group is involved in many joint publications. Their own scientific work should also focus more on the topic of aging and the data should be interpreted more intensively in collaboration with other groups at the FLI.

Grosse Research Group: This group, established at the institute in May 1995, works and publishes well on genome instability and cooperates with other research groups at the FLI in the context of the experimental models involving mice and fish. It should develop even more dynamically in future, raising more third-party funds, for example.

Herrlich Research Group: This research group was set up at the institute in October 2003 and is a decisive driving force for the development of the FLI as a whole. Their publications are of outstanding international quality. The linking of molecular work to cancer and aging processes is excellent. The group is not only particularly good within the institute but well beyond, playing a role in leading networks and holding its own internationally.

Platzer Research Group: The genome analysis that forms the focus of this group is excellent. The group has been in existence at the institute since 1993 and has been under new leadership since December 2004. Both the group’s genetic and epigenetic work is very impressive and has been published outstandingly well. Scientifically, the group plays a particularly important role at the FLI and works in a very goal-oriented fashion in cooperation with other groups, applying their broadly-based method expertise. What is very convincing, too, is the way in which their work focuses on research issues relevant to aging processes.

Sühnel Research Group: This group has been functioning at the institute since January 1993, mainly providing a scientific service in bioinformatics for other groups at the FLI, and is thus

involved in joint publications. The idea of creating a comprehensive database for research into aging in cooperation with scientists at Jena University is welcomed. It should, however, be noted that a database of this kind is only convincing if it is sufficiently complex. Aspects such as functional genomics, for example, should be included.

Wang Research Group: This group, which was established at the FLI in February 2006, produces excellent work and concomitantly has a remarkably good publication record. The genome stability issues the group has decided to pursue are well integrated in the institute's general concept.

Weih Research Group: This group has been investigating immunological issues since May 2004, especially the NF- κ B signal transduction pathway. The obtained results are published well. There is also a clear relationship to the FLI's dedicated research mission.

On the nine junior research groups:

Calkhoven Research Group: This junior research group was set up at the FLI in January 2005 and investigates gene regulation which is significant for certain metabolic processes. Thus the connection to the FLI's overarching issues is basically recognisable but the group should extend their investigation on an even greater focus. Publication performance, which recently went down, should be increased again in future. Having successfully bred a new mouse model the group should have the potential to do this.

Cellerino Research Group: The investigations of those involved in this group were originally initiated in the context of the Englert Research Group in July 2006. Since December 2007, the group has become an independent junior research group under the current head. Cooperating with the Englert and Platzer groups, this research group has set up the *Nothobranchius furzeri* fish model. It thus plays an important role at the FLI. The fish model could prove to be extremely interesting to analyse the molecular mechanism of the aging processes. In the course of further, very convincingly planned investigations, it will remain to be seen whether the model can fulfil the well-founded, high expectations. Even before becoming independent the group published very well and is internationally competitive.

Heuer Research Group: This group, being established in November 2004, is working very inventively on a thyroid hormone that is relevant to metabolically induced neurodegenerative disease occurring at higher age. Given this theme, the group fits very well in the FLI's general concept. Performance so far has been extremely convincing and the publication record reflects this. The work has high potential for the coming years. Thus every opportunity should be taken to raise further third-party funds.

Kaether Research Group: The good studies carried out by this group, which has existed as a junior research group at the FLI since September 2005, could profit from intensive use of the X-ray techniques and 3D structure analysis available at the FLI. In general, the research group should focus more on the FLI's core research issues.

Morrison Research Group: This research group was founded in December 2006 and is an off-shoot of the Herrlich Research Group. Their work is exceptionally good as their qualitatively impressive publications reveal.

Ploubidou Research Group: Thematically the group is very well suited to the FLI. It was set up in April 2005 and works on virus-induced, age-related tumour diseases. Whilst the group has not published to date, it is expected that the group translates their promising preliminary results into publications in the near future in order to become internationally competitive.

Schilling Research Group: This group, working at the FLI since March 2005, has focussed on an interesting goal. The basic ideas behind what they want to analyse are comprehensible but it seems doubtful whether the selected research topic can be successfully targeted in the present way. Collaborations with other in house groups are presently too weak. Publication performance and third party funding recruitment has lagged well behind expectations.

Than Research Group: Since it was established in September 2006, this group, working in crystallography, provides for the FLI an important method for structure-function analysis which is essential for several in-house research groups and aids their progress. The group is highly motivated and very promising. They are recommended to cooperate also with scientists in Jena who require X-ray techniques to elucidate molecular structures. The group should enhance its publication performance in the coming years. They are in a very good position to do so.

Tuckermann Research Group: Since it was set up in April 2004, this junior research group has presented convincing results and has recently published them well. In particular, they have been able to determine more closely specific functions of the glucocorticoid receptor. These findings are extremely interesting in relation to metabolic diseases such as diabetes, for example. Like several other FLI research groups, also this group will benefit significantly from the improvement of the mouse facility.

3. Cooperation

In the last few years, the FLI has noticeably extended its cooperation with other research institutions. This is particularly true of collaborations in Jena itself which were deemed in need of significant improvement at the last evaluation.

On the Beutenberg Campus in Jena various research institutes have moved closer together. In everyday research this is reflected in very important interdisciplinary and informal cooperation between scientists beyond institute boundaries. Cooperation between the FLI and the HKI is particularly significant in this context. They interact closely in fields such as mutual use of techniques. Regular meetings between the directors ensure that the opportunities for collaboration are recognised on the one hand, while achieving a sensible demarcation of research topics on the other. The two institutes' PhD programmes are also well coordinated.

It is very pleasing that cooperation in Jena has been institutionalised by integrating other institutions. This is documented by the founding of the Beutenberg Campus e. V., an association of altogether eleven institutions including the two Leibniz Institutes, the FLI and the HKI, Jena University with the University Hospital, as well as the Max Planck Institute for Chemical Ecology. The association also deals with issues such as child-care provision near the workplace for the children of their staff.

Both in research and teaching there is intensive cooperation with Jena University. Seven of the ten senior group leaders have joint professorships at Jena University. Concrete collaboration in research is illustrated particularly clearly by the Collaborative Research Centre 604, "Multifunctional Signalling Proteins" (Spokesman: Reinhard Wetzker, Jena University, beginning of funding lasting a maximum of twelve years: 1.1.2001), which involves six research groups from the FLI. The FLI is responsible for 6.5 of the 17 part projects in this collaborative research. Scientists from the FLI have an appropriate teaching load at Jena University, teaching an average of 2.4 hours per week of during the semester.

For legitimate reasons the FLI is hoping to extend its cooperation with hospitals in Jena in the coming years, in line with the plans for continuing to develop its general concept. The conditions for doing so are very good. Both the scientists at the University Hospital and those at the FLI have a clearly recognisable interest in intensifying cooperation.

It is a sensible policy for the FLI not to have its own library but to use the facilities at and work together with the Thuringian University and State Library.

The FLI also maintains national and international scientific contacts outside of Jena. One concrete example is the institute's participation in the National Genome Research Network (NGFN). The FLI's national and international contacts should be augmented. The FLI is recommended to increase the number of foreign visiting scientists financed by the institute. The number of FLI scientists visiting research institutions abroad should also be increased.

4. Research Results

In the reporting period, the publication record was very good with articles appearing in internationally-reviewed journals. FLI staff published a total of 79 articles in peer-reviewed journals in 2005, a total of 84 in 2006 and a total of 93 in 2007. It is very pleasing to note that cooperation between various research groups at the institute is documented in joint publications. It is necessary to improve publication performance in some working groups (c. f. the statements on the individual groups under item 2).

Of particular importance to the networking of studies at the FLI have been the establishment of animal models used by various groups as well as the existence of a broad palette of analytical methods. Apart from the mice, amongst the animal models the fish *Nothobranchius furzeri* should receive special attention. The various methods being excellently established at the FLI – like NMR spectroscopy, X-ray crystallography, and genome analysis – are not only extremely important for the FLI itself but most useful for other groups in Jena, too.

The FLI should present its research results at central international conferences to a greater extent than they have done so far. Furthermore, they should examine carefully which results in the biomedical field should be registered for patents and which should not.

The FLI's public presentation on the Internet is remarkably good. The website is well arranged and clearly structured. Other public outreach work, such as involvement in the "Long Night of Science" is appreciated.

5. Promotion of Junior Academics and Non-Academic Staff

From 2005 to 2007, 21 PhD students obtained successfully their degree at the FLI. 56 publications ensued from the dissertations. In relation to the supervision of doctoral students this is a very good record.

The Leibniz Graduate School on Aging and Age-Related Diseases, which was established in 2006, is an excellent concept for structuring doctoral training and integrates all 73 doctoral candidates currently working at the institute. The system of doctoral supervision which includes, amongst other things, a thesis committee involving an external reviewer, is very convincing. The student assembly, which is organised by doctoral students for doctoral students, benefits junior academics by making them more independent at an early stage.

As part of the supervision programme all doctoral candidates are reviewed on their results at the end of the first year. If they are successful, they are allowed to continue working on their dissertation at the FLI for a maximum of a further three years. Checking results at a relatively early stage avoids a situation in which doctoral students have already worked for two or three years before having to break off unsuccessful projects. At present, some doctorates are taking longer which the FLI explains by the fact that these doctoral students had not been integrated in the newly-structured doctoral programme when they embarked on their doctorates. In future, doctorates are not supposed to take longer than four years on principle.

It is pleasing to observe that collaboration with Jena University on supervising doctoral students functions smoothly, both formally and in practice. Should it prove possible to put current ideas on establishing an MD programme at the Medical School in Jena into practice, this might be a suitable and welcome basis for intensifying joint supervision of doctoral students with a medical background at the university and the FLI.

As well as these structural aspects, it is worth noting that the composition of the group of doctoral students has changed significantly in the last few years. Young academics from abroad have been recruited. This has contributed to the openness of the working atmosphere at the FLI. The dynamics resulting from permanent change in the composition of the doctoral group is guaranteed not least by the fact that the FLI rightly directs postdocs to other research institutions or other professional positions after completing their doctorates. This policy is emphatically welcomed.

In the last few years, three junior academics have been appointed to senior positions at home as well as abroad (thus these groups were not evaluated in detail). In the last few years, too, the FLI has also introduced new, very good structures for promoting postdocs and junior research group leaders. Junior research groups are set up for six years and – by analogy with the EMBL (European Molecular Biology Laboratory) model – may be extended up to three years. It is a very good idea that the leaders are selected by a review committee appointed by the FLI's Scientific Advisory Board. An independent evaluation of results is carried out after four years by a panel of experts appointed by the Scientific Advisory Board. On the basis of their findings the director decides whether the junior research group should continue. The system is convincing and will come into effect from the end of 2009. It is conceivable that junior research group leaders will not usually be offered permanent positions at the FLI and that tenure track will be restricted to exceptional cases.

The FLI is planning to set up further junior research groups. This is a welcome development. Care should, however, be taken to ensure that the increase in the number of junior research groups should not introduce an imbalance in relation to the number of working groups already headed by established scientists.

Currently, the FLI has five full-time positions for trainee biology lab assistants and office administrators. Against the background of some 98 positions (full-time equivalents financed from basic and third-party funding) in the non-academic sector and some 111 positions (full-time equivalents financed from basic and third-party funding) in the academic sector, this number is appropriate. A positive feature which should be emphasised is that the various in-house seminars the FLI runs for trainees are also open to technical personnel for further training (in different molecular biology techniques, for example).

6. Structure and Management of the FLI

The leadership of the FLI is excellent, both scientifically and organisationally. In accordance with the recommendations of the German Science Council, a director was appointed who has an authority to set goals and to form the development of the institute. He has an impressive record of introducing numerous scientific and structural innovations on the one hand, while always managing to do this in such a way that the various groups of employees at the institute have been able to identify with the process of change on the other. This is a remarkable achievement.

The current director will soon be retiring and stepping down from this position. Ongoing negotiations to appoint a successor must be concluded quickly. The providers of funds are aware that it is essential to fill the position in spring 2009.

In addition to the director, the statutes provide for internal bodies comprising the Board of Directors (currently consisting of the director and the Head of Administration), the Assembly of Research Group Leaders and – in accordance with a suggestion from the Scientific Advisory Board – a Scientific Council of representatives of the FLI (two senior and two junior research group leaders). The members of this Council are elected by the Assembly for two years. This Council meets every two weeks to discuss scientific and organisational matters pertaining to the FLI. These structures have been accepted by those involved at the FLI and are operative.

The Scientific Advisory Board is composed of outstanding scientists from home and abroad and works excellently. The Board regularly conducts site visits, for example, which are an important instrument of quality assurance at the institute.

Currently, 260 employees and a further 50 individuals (fellows, guest researchers on extended visits) are working at the FLI. The FLI would like to increase the number to a maximum of 350 persons, largely to be financed by raising third-party funds. Restricted growth of this kind is very convincing. Expansion beyond this would, however, hamper everyday, informal exchange, which currently functions very well indeed, and might significantly slow down reaction to new scientific developments.

The FLI's administration functions extremely effectively and efficiently. The FLI's growth in the last few years legitimates moderate expansion of the administration. It is recommended that the intended increase in researcher positions is accompanied by an adequate increase in the number of administrative staff so that researchers will also be released from administrative work as much as possible.

7. Financial Resources and Use Thereof

The provision of basic institutional funding at the FLI is appropriate. A cost-performance accounting system has been introduced and is used efficiently as an internal control mechanism. Some of the basic funding for equipment and materials is awarded on the basis of an internal bonus system. In 2007, the research groups were allocated a fixed sum of 1.6 mill. € for equipment and materials; a further performance-related 613,000 € were apportioned via the bonus system. This performance-related allocation of funding is most welcome. Plans for the financial extension of the bonus system are also convincing. Furthermore, it is pleasing that those involved in the system are in agreement with it. The way the bonus is distributed is based on the amount of third-party funds raised. By relating it to a specific criterion, a highly transparent and simple distribution mechanism is achieved. Consideration should be given to including other criteria; however, this should only happen if it does not affect the simplicity of the system.

In its programme budget the FLI is working on the basis of two thematic programme areas which are divided up into a total of fourteen individual topics and one programme area for central facilities which is divided up into ten individual topics. When declaring items and funds in the programme budget, it is recommended that the FLI breaks down the individual topics in the thematic programme areas in order to optimise its transparency.

In order to enable a sound programme budget to be drawn up, the providers of funds should make budgeting more flexible. In particular, the possibility of carrying budget funds forward should be extended and the binding character of staffing schedule should be loosened in accordance with the Federal Government and the *Länder's* minimum requirements to be met by programme budgets.

In the last few years it has been possible to increase the absolute figures for third-party funds considerably. It should be noted that DFG approvals in particular grow from approx. 338,000 € in 2005 and approx. 670,000 € in 2006 to 1,162,000 € in 2007. These pleasing increases cannot, however, hide the fact that the relative percentage of third-party funds in the institute's overall budget (in the last three years a maximum of 15.5 % of the overall budget) is too low. The FLI recognises this itself and is striving to procure 25 % of its income from third-party funds. In accordance with this self-assessment, the FLI is recommended to increase the proportion of third-party funds in the overall budget significantly in future. One of the ways of achieving this would be by utilising the funding opportunities offered by programmes at European level.

At present, the FLI is seriously short of space for laboratories and animal facilities. The considerable efforts that have been undertaken by the Free State of Thuringia to improve this situation are illustrated by the new construction works. According to the plan, the building which is currently under construction will be ready for use at the beginning of 2010. Until then, conditions will inevitably remain cramped. It should be noted that there is certain scientific justification for the extension of the FLI. The necessity for a new building mirrors the FLI's dynamic development in the last few years.

On the whole, the present instalment, set up and combination of large equipment required for scientific purposes is almost appropriate. Scientifically well-founded arguments to upgrade the present NMR spectroscopy are supported. It is not only the FLI that benefits from NMR spectroscopy, also other research institutions in Jena use the FLI NMR set up in terms of joint projects, as for example via the Collaborative Research Centre 604. Apart from NMR spectroscopy, it has been strongly suggested that the potential synergies of various research institutions in Jena might be exploited more intensively by joint acquisition of large equipment.

Automatic sequencing is important for most working groups at the FLI and should be consolidated by the provision of adequate personnel.

8. Personnel

In the last few years, the FLI has changed its personnel structure significantly. 15 of the FLI's 19 research groups have only been in existence for a maximum of four years. The so far generated dynamics has gripped the institute as a whole. It has been possible to integrate even those groups and people who have been present for much longer into the restructuring process.

There is a remarkable degree of internationalisation amongst the staff at the FLI. This is not only true for the group of doctoral candidates but for the group leaders as well. Five of the 19 positions for group leaders are currently filled by foreign scientists from the United Kingdom,

Italy, The Netherlands and China. The German group leaders have spent extended periods as visiting scientists at foreign research institutes, often in the USA.

The FLI's pronounced internationalisation is reflected by the use of English as the major working language of everyday research. Another positive feature that should be emphasised is that also the non-academic staff have appropriate language competence. They take part in the language courses the FLI offers, increasing their personal qualifications and benefiting the FLI immensely.

In relation to recruiting academic staff, the FLI will be on the right path if it assigns scientific quality as a core criterion. In a research field as novel as that of the FLI it would not be advisable to prioritise narrow thematic relevance over scientific quality. This comment should be seen in connection with the recommendation that the FLI's continued thematic development should strike an appropriate balance between keeping abreast of established research directions and openness for new issues on the one hand, and creating a profile for the institute on the other.

By comparison, especially with other institutes and research facilities in Germany, good progress has been made in gender balance. 40 % of doctoral students are male, while 60% are female. At the post-doctoral level, 67 % are men, 33 % women. 4 female scientists head junior research groups while 6 are headed by male scientists. All the senior research group leaders are men. This should be changed if possible. The FLI recognises this and points out that in two cases female scientists turned down offers to become senior research group leaders. The FLI should continue to make efforts to recruit female researchers to executive positions.

The working atmosphere at the FLI is characterised by intensive exchange amongst all those working there. This open discussion culture and the clearly recognisable interaction are exceedingly important and advancing. In this context, the only thing missing – and this is something the FLI is striving to achieve with a dedicated mentoring programme – is a chance for postdocs working in different research groups to develop a stronger group identity. This would make it easier for them to reflect on their specific situation between completing their doctorates and becoming junior research group leaders elsewhere or taking up other positions.

47 % of the current proportion of fixed-term employees amongst the scientists is financed from basic funding, which is appropriate.

The age structure amongst the research group leaders is currently dominated by forty-year olds. A positive factor in the senior groups is that a few of group leaders are still comparatively young. But one critical point is that the average age of the leaders of the junior research groups is relatively high in comparison to similar groups and institutions elsewhere. In the medium term, attempts should be made to recruit younger research group leaders at the FLI.

In order to make appropriate use of the upcoming infrastructure for keeping animals it will be necessary to increase the number of keepers significantly in future. Well-founded scientific arguments have been forwarded which justify eight further positions.

9. Implementation of the Recommendations by the Last Evaluation Committee

The last evaluation of the then Institute of Molecular Biotechnology (IMB) resulted in a recommendation to refocus the research institution entirely. This has been in principle achieved. The reorientation of the institute has meant that these recommendations on the individual areas of work have become obsolete.

Enclosure

Members of the Evaluation Group and Guests

1. Evaluation Group

Chairwoman (Member of the Senate Evaluation Committee)

Prof. Dr. Dr. h. c. Ulrike Beisiegel	University Medical Center Hamburg-Eppendorf, Center for Experimental Medicine, Department of Biochemistry and Molecular Biology II: Molecular Cell Biology, Hamburg
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Vice Chairman (Member of the Senate Evaluation Committee)

Prof. Dr. Rudolf Tippelt	Department of Educational Science, University of Munich (LMU), Munich
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External Experts

Prof. Dr. Hellmut Augustin	Aventis Foundation-endowed Chair for Vascular Biology and Tumor Angiogenesis, Medical Faculty Mannheim, University of Heidelberg, and German Cancer Research Center Heidelberg (DKFZ)
Prof. Dr. Alexander G. Betz	Division of Protein and Nucleic Acid Chemistry, MRC Laboratory of Molecular Biology, Cambridge, England
Prof. Dr. Dr. Christian Betzl	Department of Biochemistry and Molecular Biology, University of Hamburg
Prof. Dr. Carmen Birchmeier	Max-Delbrück-Center for Molecular Medicine, Berlin-Buch
Prof. Dr. Thomas Dandekar	Department of Bioinformatics, University of Würzburg
Prof. Gretchen J. Darlington , PhD	Baylor College of Medicine, Houston, Texas, USA
Dr. Robert Geisler	Max Planck Institute for Developmental Biology, Tübingen
Prof. Dr. Beatrix Grubeck-Loebenstein	Institute for Biomedical Aging Research, Austrian Academy of Sciences, Innsbruck, Austria
Prof. Dr. Peter Karran	London Research Institute, Clare Hall Laboratories, London-South Mimms, England
Prof. Dr. Robert Kay	Division of Cell Biology, MRC Laboratory of Molecular Biology, Cambridge, England
Prof. Dr. Primo Schär	Institute of Biochemistry and Genetics, Department of Clinical and Biological Research, University of Basel, Switzerland
Prof. Dr. Uwe Wenzel	Molecular Nutrition Research, University of Giessen

*Federal Representative*ORR Dr. Volker **Fürst**

Federal Ministry of Education and Research, Bonn

*Representative of the Federal States*MinDirig'in Dr. Beate **Wieland**

Ministry of Innovation, Science, Research and Technology of the State of North Rhine-Westphalia, Düsseldorf

2. Guests*Representative of the relevant Federal Department*MinR'in Dr. Gabriele **Hausdorf**

Federal Ministry of Education and Research, Berlin

*Representative of the relevant State Department*MinDirig Dr. Wolfram **Eberbach**

Thuringian Ministry of Education and Cultural Affairs, Erfurt

MinR Dr. Joachim **Niklaus** (temporarily present)*Representative of the Office of the Gemeinsame Wissenschaftskonferenz, Bonn*MinR'in Rebekka **Kötting***Representative of the Leibniz Association*Prof. Dr. Walter **Rosenthal**

Leibniz Institute for Molecular Pharmacology, Berlin

*Representative of the Scientific Advisory Board*Prof. Dr. Piet **Borst**

The Netherlands Cancer Institute, Amsterdam, The Netherlands

Representatives of Cooperating Partners

The following representatives of cooperating institutions took part in a one-hour interview:

Prof. Dr. Wilhelm **Boland**

Chairman, Beutenberg Campus e. V., Jena

Prof. Dr. Axel A. **Brakhage**

Director, Leibniz Institute for Natural Product Research and Infection Biology e. V. – Hans-Knöll-Institute, Jena

Prof. Dr. Klaus **Dicke**

Rector, University of Jena

Prof. Dr. Reinhard **Wetzker**

Coordinator of the Collaborative Research Centre 604 "Multifunctional Signalling Proteins – Oligomeric Protein Complexes as Mediators of Cellular Regulation Processes", and Head of the Institute for Molecular Cell Biology, University of Jena

16.09.2008

Annex C: Statement of the Institution on the Evaluation Report

**Leibniz Institute for Age Research – Fritz Lipmann Institute (FLI)
Jena**

The evaluation report has been circulated among the research group leaders of the FLI. We did not find anything that would need comments from the institute's side. We would like to thank the committee for its efforts. We feel greatly flattered by the very positive view the FLI is seen by the committee and take the report as stimulus for further efforts towards scientific excellence.

As already mentioned in the evaluation report of the FLI we initiated early a search for a successor of Peter Herrlich as director. We considered the early search important for the continuity and future development of the FLI. We are happy to announce that the candidate identified, Professor Ian Hickson from the University of Oxford, who was present on the day of the evaluation, accepted the position soon after the evaluation. We expect Professor Hickson to take responsibility as Scientific Director early next year. Currently, preparations are ongoing to accommodate a partial transfer of his laboratory. The complete transfer will only be possible after completion of the new building.