
“LIFE SCIENCE MEETS PHYSICS”

**Science and Innovation Campus
Beutenberg**

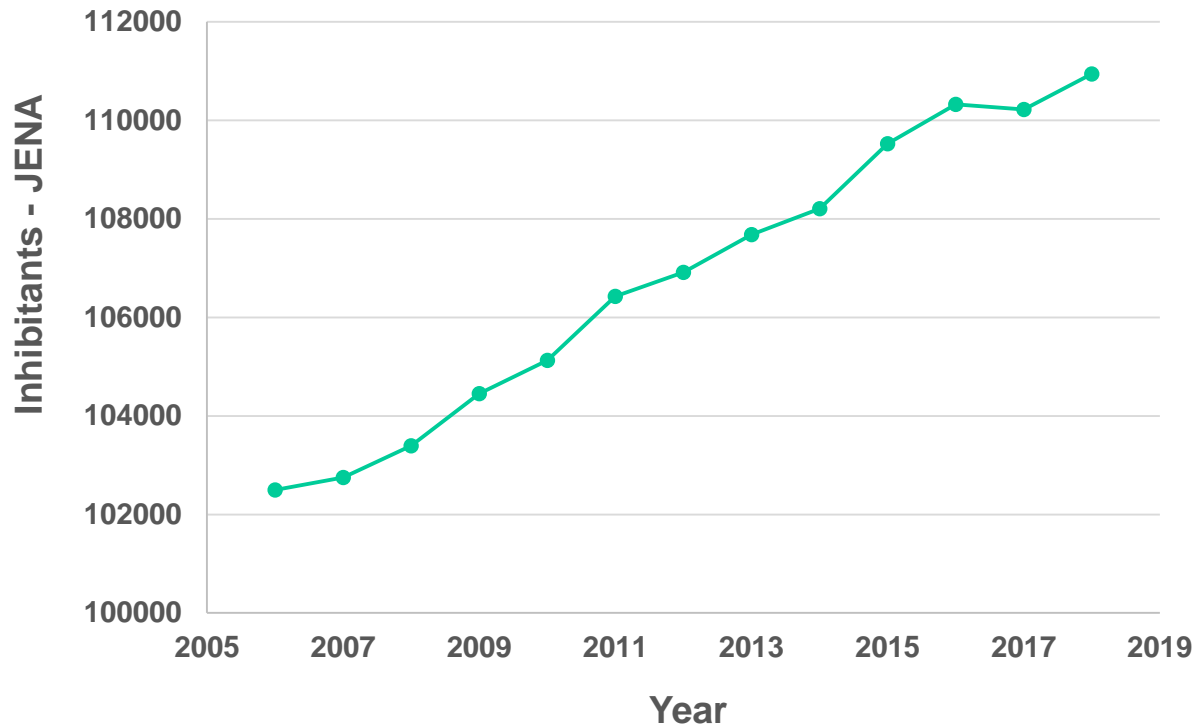
Prof. Dr. Peter F. Zipfel

Beutenberg-Campus Jena e.V.



“LIFE SCIENCE MEETS PHYSICS”

Beutenberg Campus in the City of Jena



Population Growth 2007-2018

© Statistisches Landesamt und
JenaWirtschaft 2018



“LIFE SCIENCE MEETS PHYSICS”

City of Jena



- Inhabitants** ~ 110,940 (June 2018)
- Students** ~ 22,500 (FSU Jena, EAH Jena)
- Patents** ~ 250 per 100,000 inhabitant
(ø Germany 59)
- University graduates** ~ 32% (ø Germany 22%)

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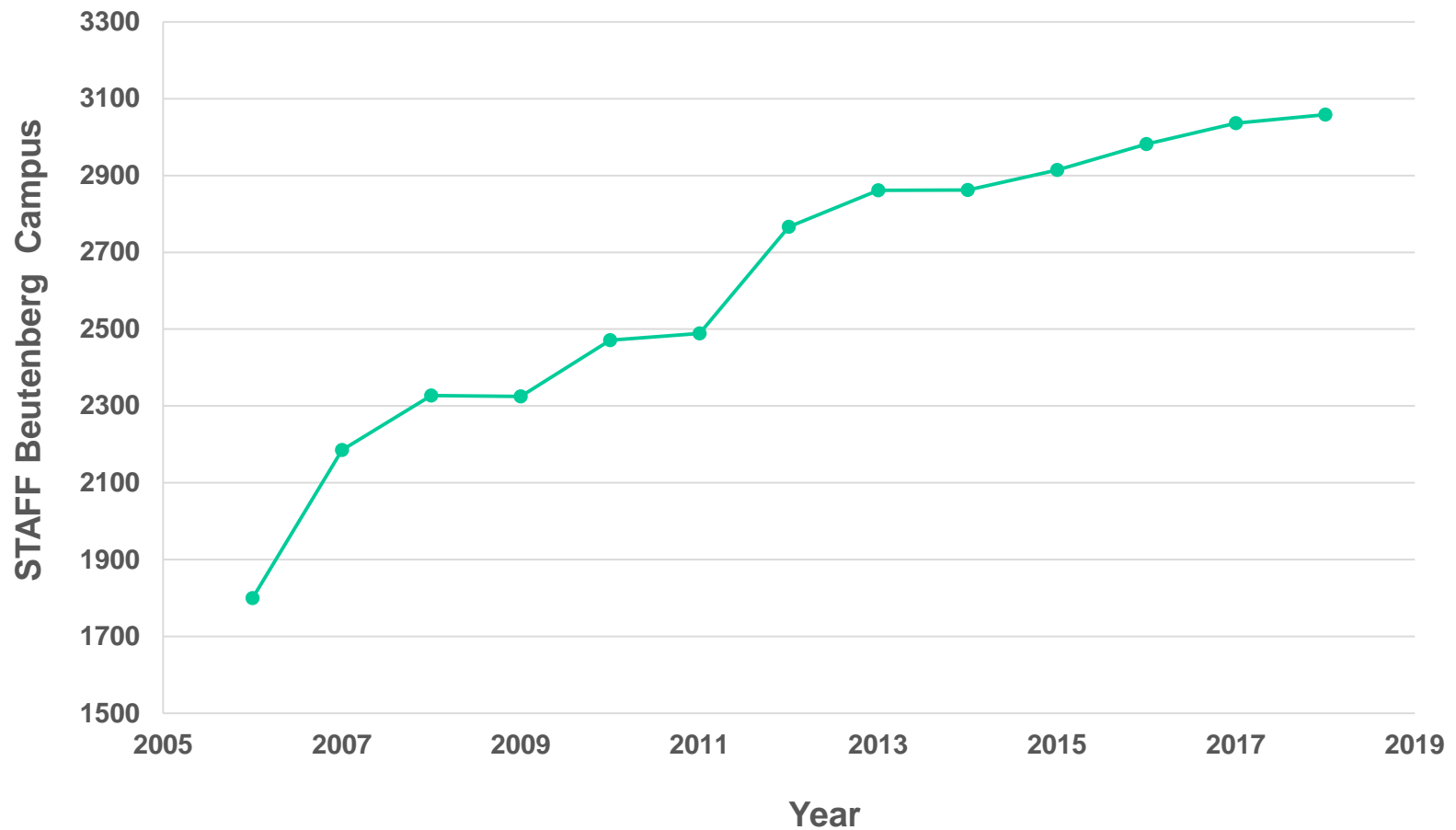


“LIFE SCIENCE MEETS PHYSICS”

Beutenberg Campus Jena



Science and Innovation Campus



“LIFE SCIENCE MEETS PHYSICS”

Beutenberg Campus Jena

Science and research centre in the southern part of Jena



➤ 10 Research institutes

- Fraunhofer Institute for Applied Optic and Precision Engineering
- Friedrich Schiller University Jena - Center for Molecular Biomedicine
- Friedrich Schiller University Jena - Institute for Applied Physics
- Leibniz Institute for Age Research – Fritz Lipmann Institute
- Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute
- Leibniz Institute of Photonic Technology
- Max Planck Institute for Biogeochemistry
- Max Planck Institute for Chemical Ecology
- *Max Planck Institute for the Science of Human History*
- University Clinic Jena - Department of Virology and Antiviral Therapy

➤ 2 Innovation centres with more than 50 start-up companies

- BioInstrumentation Centre
- Technology and Innovation Park Jena

➤ 1 Company Wacker Biotech GmbH



Beutenberg Campus Jena

Science and research centre in the southern part of Jena



➤ Established

- 1950 Biomedical Research Centre (Hans Knöll)
- 1989-1992 Beutenberg Campus (after political changes)

➤ Budget

annually **>172** million euro (including ca. **42 %** third-party funds)

➤ Financing

Federal Republic of Germany, State of Thuringia, Third-party funds

➤ Employees

more than **3058** employees (**25 %** foreign employees)

- about **46 %** are scientists working in the field of research and development
- including more than **1050** diploma/master students and PhD-researchers
- employees from over **75** countries / **8** Graduate Schools



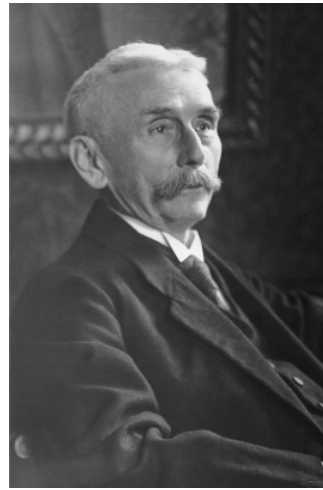
Beutenberg Campus – History



Carl Zeiss
(1816-1888)



Ernst Abbe
(1840-1905)



Otto Schott
(1851-1935)



Erich Schott
(1891-1989)



Hans Knöll
(1913-1978)

1846 Opening a workshop for precision engineering and optic

→ 1866 Cooperation with Ernst Abbe

→ 1884 Founding: “Glasstechnology Laboratory“

→ 1938 “Bacteriological Laboratory“

→ 1950 Founding of a

“Biomedical Research Centre“

“LIFE SCIENCE MEETS PHYSICS”

Nobel Laureat Erwin Schrödinger

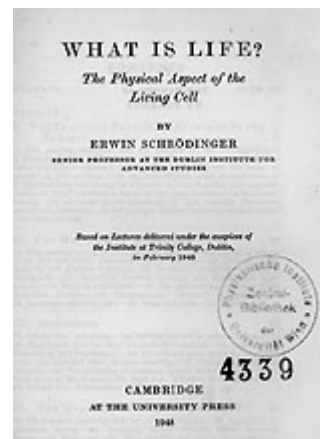


Erwin Schrödinger
(1887-1961)



Nobel Price in Physics 1933

Erwin Schrödinger's idea that physics could help solve biological riddles was the spark that led many researchers to try to unlock the secrets behind our book of life, the structure of DNA.



Erwin Schrödinger



Erwin Schrödinger
(1887-1961)

Short Biography

Career perspectives for young physicist were rather bad. Schrödinger accepted an offer from the University in Jena and leaves Vienna. Before moving to Jena at April 6, 1920 he marries Annemarie Bertel.

In recognition of his achievements, he is awarded a position as honorary Professor, at June 25, 1920 by the University of Jena.

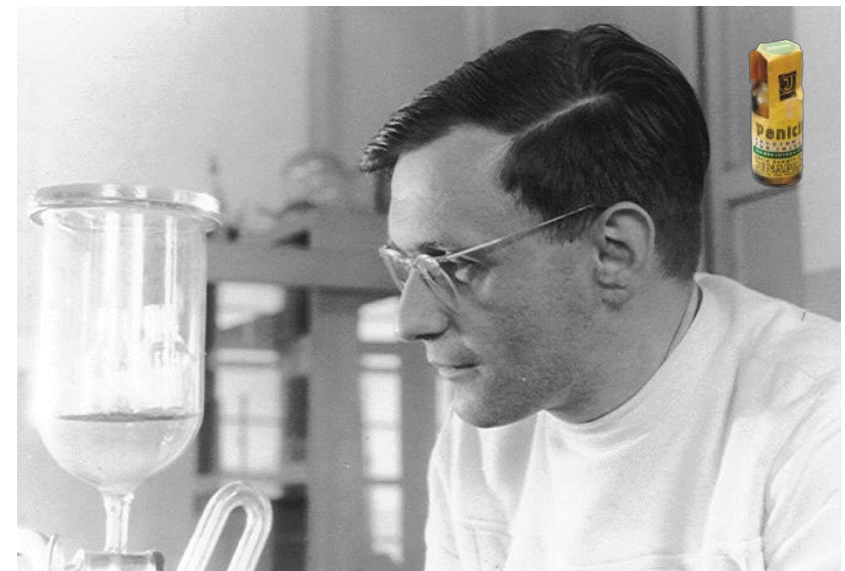
End of September 1920 Erwin Schrödinger informed that he was offered a position as honorary Professor for Theoretical Physics from the Technical University of Stuttgart which he accepted.

“LIFE SCIENCE MEETS PHYSICS”

Beutenberg – History



In the 1950s the medic and bacteriologist **Hans Knöll** (*1913 †1978) realised his vision of founding a big Biomedical Research Centre on the Beutenberg.



“LIFE SCIENCE MEETS PHYSICS”

Beutenberg Campus 1994



“LIFE SCIENCE MEETS PHYSICS”

Beutenberg Campus 2016



“LIFE SCIENCE MEETS PHYSICS”

Beutenberg Campus 2018



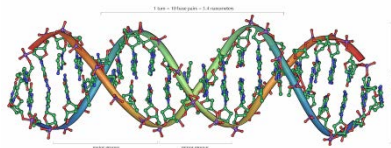
Beutenberg Investments (2006-2016)

• 2006-2008	Center of Molecular Medicine (CMB)	9.9 Mio. €
• 2007	Technology and Innovation Park (TIP)/ new building „Technikum“	2.5 Mio. €
• 2007-2013	Fritz Lipmann Institute (FLI) / new building	38.0 Mio. €
• 2008	Wacker Biotech GmbH / new building	18.0 Mio. €
• 2009-2010	Leibniz Institute for Photonic Technology (IPHT) / Fiber Drawing Tower and Cleanroom Building	8.8 Mio. €
• 2010	Institute for Applied Physics / annex	3.0 Mio. €
• 2010-2012	Fraunhofer IOF / new building	17.0 Mio. €
• 2010-2011	Max Planck Institute for Chemical Ecology (MPI-CE)/wind tunnel plant	3.5 Mio. €
• 2010-2012	Hans Knöll Institute (HKI) / new building	19.5 Mio. €
• 2010-2011	Kita Beutenberg / new building	1.7 Mio. €
• 2010-2012	SEPTOMICS / new building	5.4 Mio. €
• 2013 ff.	Abbe Center of Photonics / new building	27.0 Mio. €
• 2015 ff.	Center of Fiber Technology	6.8 Mio. €
Total:		> 160 Mio. €



“LIFE SCIENCE MEETS PHYSICS”

Research “Life Sciences”



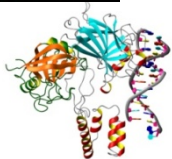
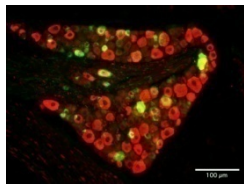
fli Leibniz Institute on Ageing -
Fritz Lipmann Institute
Ageing



 Max Planck Institute
for Chemical Ecology
Chemical Communication

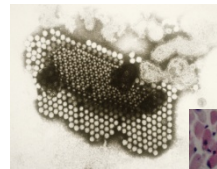


Biogeochemical cycling
of the elements at a global scale

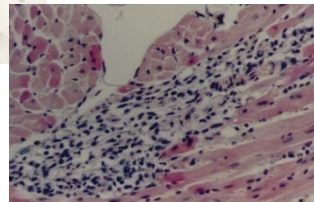


CMB
CENTRE FOR MOLECULAR BIOLOGY

Communication in cells
and organisms



Coxsackie Virus



Virology



Friedrich-Schiller-Universität Jena
seit 1558



Natural Product Research
and Infection Biology

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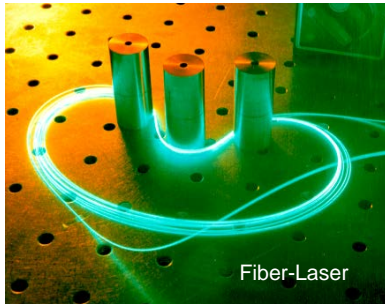
Research “Physics“



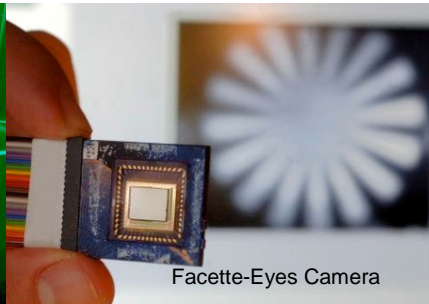
Friedrich-Schiller-Universität Jena
seit 1558

Applied Physics

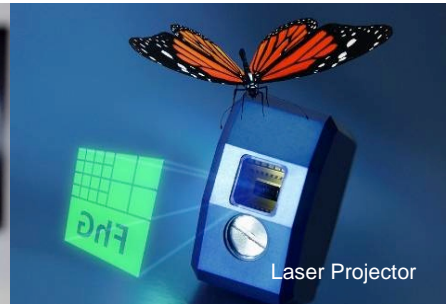
Optic and Precision
Engineering



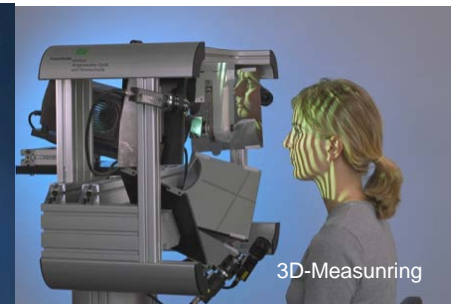
Fiber-Laser



Facette-Eyes Camera

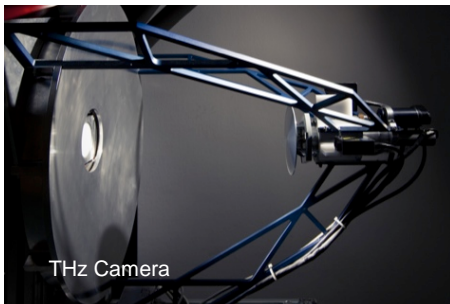


Laser Projector

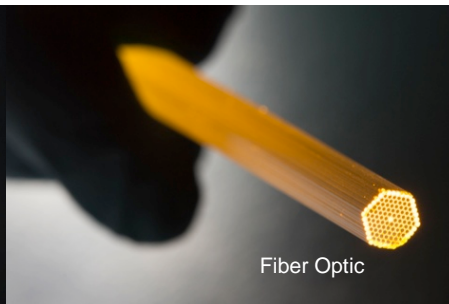


3D-Measuring

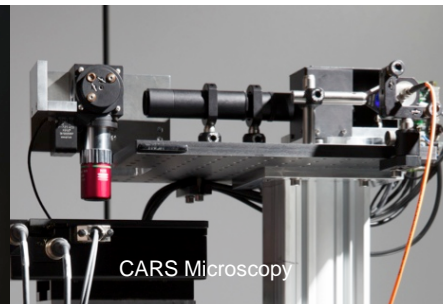
Photonic Technologies



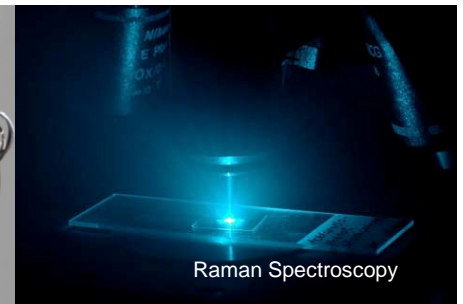
THz Camera



Fiber Optic



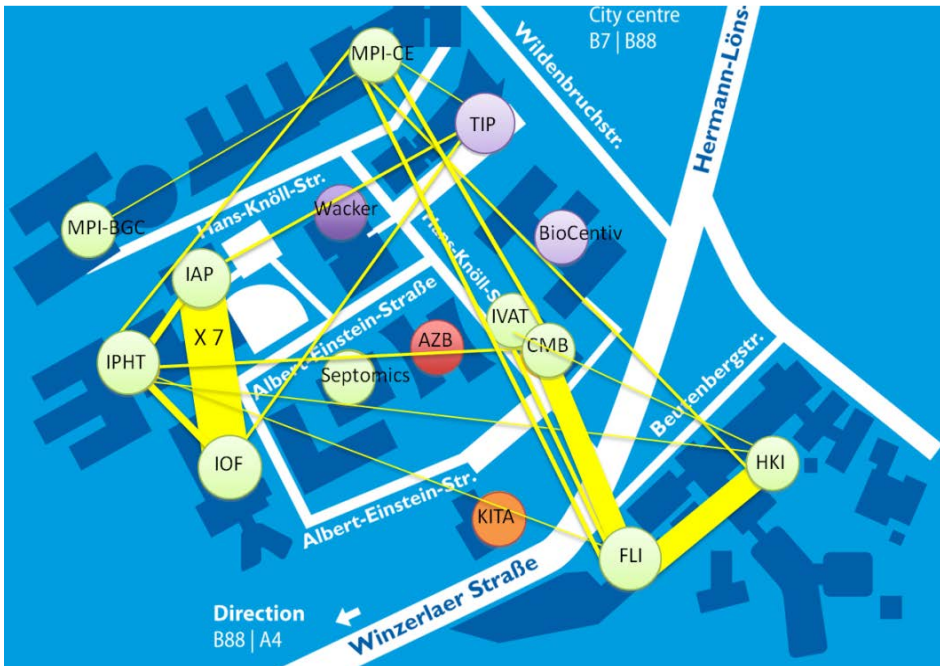
CARS Microscopy



Raman Spectroscopy

“LIFE SCIENCE MEETS PHYSICS“

Beutenberg-Campus Jena e.V.



Scientific co-publications of the institutes on Beutenberg Campus (2007-2010)

Science Award
Once a year, the association honours outstanding work by young researchers in life sciences and physics

“LIFE SCIENCE MEETS PHYSICS“

Innovation Centres at the Beutenberg Campus



BioInstrumentation Centre

- In total 51 companies in the BioInstrumentation Centre.
- Currently: 18 companies
- Since 1996 (since 2000 at the Beutenberg) more than 39 companies were successfully established.
- **ca. 500 positions created**



Technology and Innovation Park Jena (TIP)

- About 280 companies were ministered in Jena, 55 at the location Beutenberg Campus.
- Currently 36 companies are located in the TIP.
- since 1991 more than 100 companies were established successfully in Thuringia.
- **ca. 1800 positions created**

“LIFE SCIENCE MEETS PHYSICS“

Foundation of New Companies



Institute	Number of Companies	Employees
HKI	9 (incl. Alere Tech./Abbott, with IPHT)	165 (+400)
Fraunhofer IOF / FSU-IAP	14	> 250
Leibniz-IPHT	4 (plus Alere Tech./Abbott, with HKI)	25 (+400)
Total	27	> 840



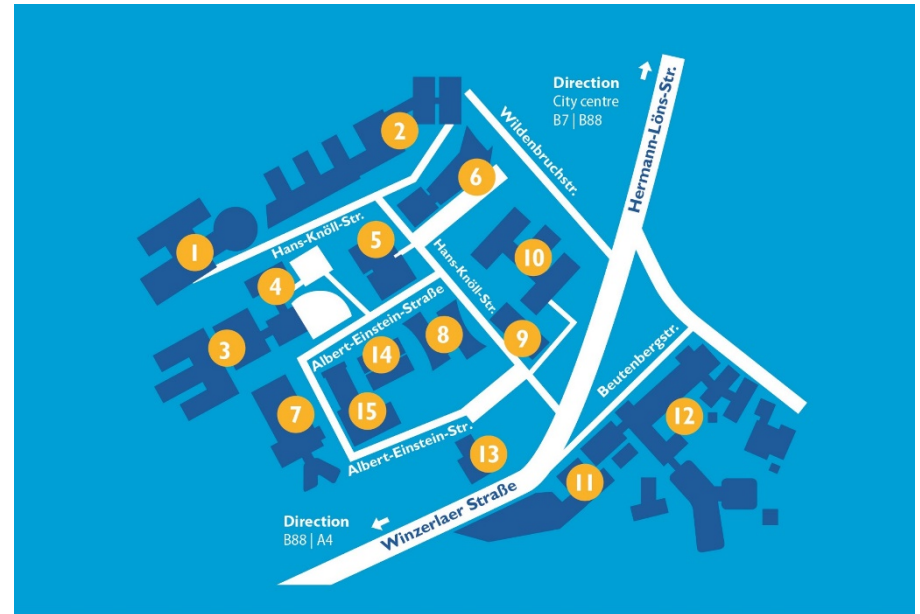
“LIFE SCIENCE MEETS PHYSICS”

Beutenberg Campus Jena e.V.



- Registered association representing a competence network linking all the institutes and other organizations located at Beutenberg campus with the aim of creating added value through optimal synergy
- Founded in December 1998 (campus office opened 2007)
- Funded by the institutions at the campus
- Managing board:

Prof. Peter F. Zipfel, HKI (Chairman)
Prof. Wilhelm Boland, MPI-CE (Deputy chairman)
Dr. Klaus Bartholmé, FSU Jena (Chairman finances)
Prof. Harmut Bartelt, IPHT (Member)
Frank Sondermann, IPHT (Member)



1. Max Planck Institute for Biogeochemistry
2. Max Planck Institute for Chemical Ecology
3. Leibniz Institute for Photonic Technology
4. Friedrich Schiller University Jena - Institute for Applied Physics
5. Wacker Biotech GmbH
6. Technology and Innovation Park Jena
7. Fraunhofer Institute for Applied Optic and Precision Engineering
8. Abbe Center Beutenberg
9. Friedrich Schiller University Jena – Center for Molecular Biomedicine
Jena University Hospital – Department of Virology and Antiviral Therapy
10. BioInstrumentation Center
11. Leibniz Institute on Aging – Fritz Lipmann Institute
12. Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute
13. Day Care Center Beutenberg
14. Center for Innovation Competence Septomics
15. Friedrich Schiller University Jena – Abbe Center of Photonics

www.beutenberg.de

“LIFE SCIENCE MEETS PHYSICS”

Initiatives of the Beutenberg-Campus Jena e.V.



Being non-profit, the association represents the interests of its members in relation to politicians, authorities and institutions.

- Presentation of the Beutenberg Campus
- Day-care Centre Beutenberg (Kita Beutenberg)
- Traffic: ICE, Beutenbike Initiative, VMT Job Ticket



“LIFE SCIENCE MEETS PHYSICS”

Activities of the Beutenberg Campus e.V.



- Public Lecture „Noble Talks“ (2005 -)
- Scientific Award “Life Sciences and Physics” (2005 -)
- Long Night of Sciences (2005 -)
- Campus Workshop “Method and Concept Transfer“ (2006 - 2011)
- **open campus** Presentation of Beutenberg Institutes (2013 – 2014)
- „weiter bilden am Beutenberg“ (2008 -)
- **Forsche Schüler Tag** School Scientists Day (2010 -)
- Intercultural Day at Beutenberg / Day of Diversity (2012, 2013, 2018)

Öffentlicher Vortrag im Rahmen der „Noblen Gespräche“

Prof. Dr. Detlef Weigel
Max-Planck-Institut für Entwicklungsbiologie, Tübingen

„Klima im Wandel –
Pflanzen im Wandel“



16. Mai 2019, 17 Uhr

Hörsaal Abbe-Zentrum Beutenberg
Beutenberg Campus
Hans-Knöll-Str. 1
07745 Jena

Beutenberg
Campus e.V.



“LIFE SCIENCE MEETS PHYSICS”

Public lecture “Noble Talks“ Carl Zeiss Stiftung

Since 2005 twenty-eight renowned scientists have presented their research to a broad audience, for example:

Christiane Nüsslein-Volhard (Nobel Prize 1995)

Max-Planck-Institut für Entwicklungsbiologie, Tübingen – Embryogenesis

Stefan Hell (Nobel Prize 2014)

Max-Planck-Institut für Biophysikalische Chemie

Ernst Th. Rietschel, President of the Leibniz-Gemeinschaft

Berlin – Unsterbliche Musik und tödliche Blutvergiftung

Erwin Neher (Nobel Prize 1991)

MPI für biophysikalische Chemie, Göttingen – Signal Transduction

Günter Blobel (Nobel Prize 1999)

Rockefeller University, New York – Cell Evolution

Hartmut Michel (Nobel Prize 1988)

Max-Planck-Institut für Biophysik

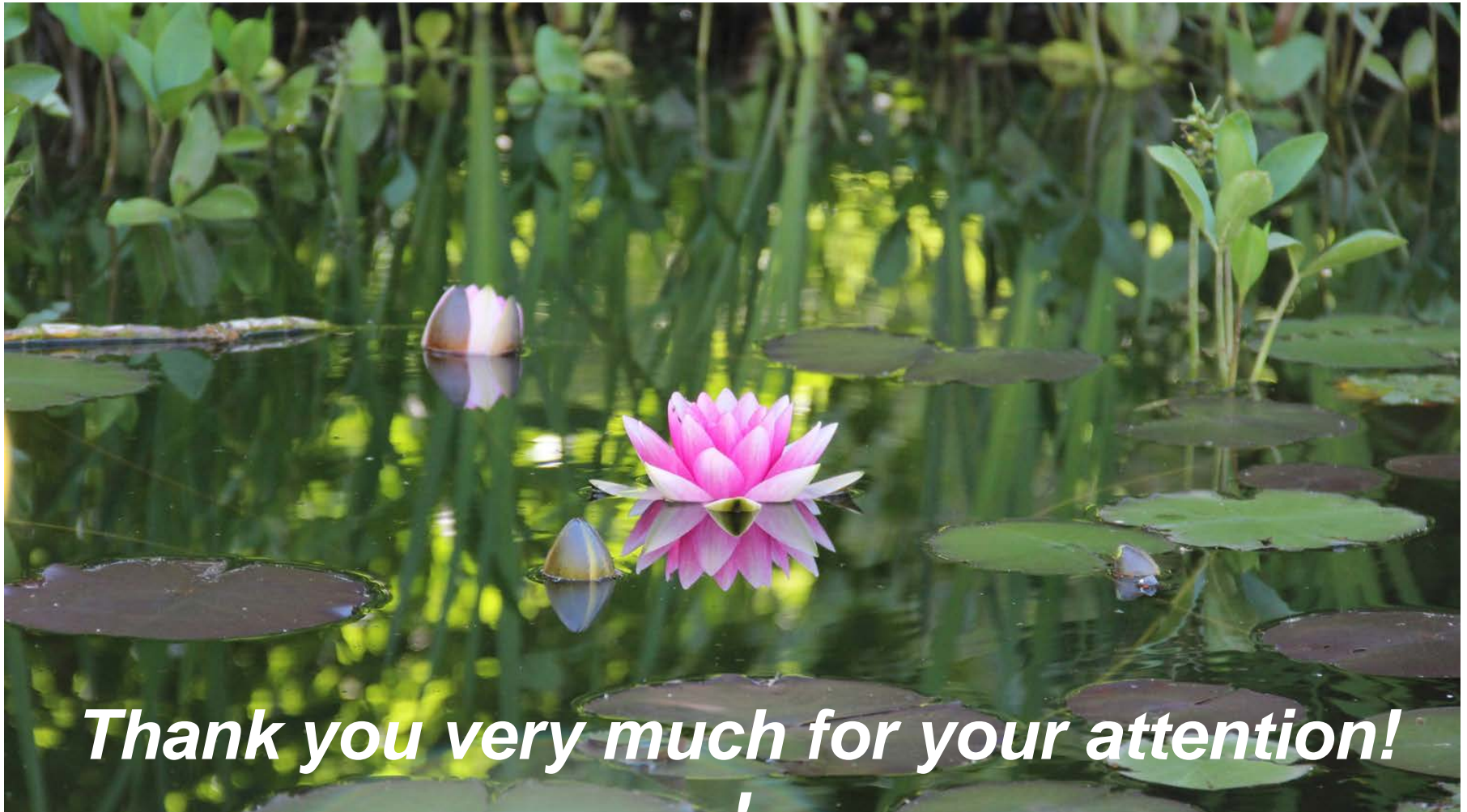
Eric Betzig, PhD (Nobel Prize 2014)

Howard Hughes Medical Institute, Ashburn, USA



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Thank you very much for your attention!