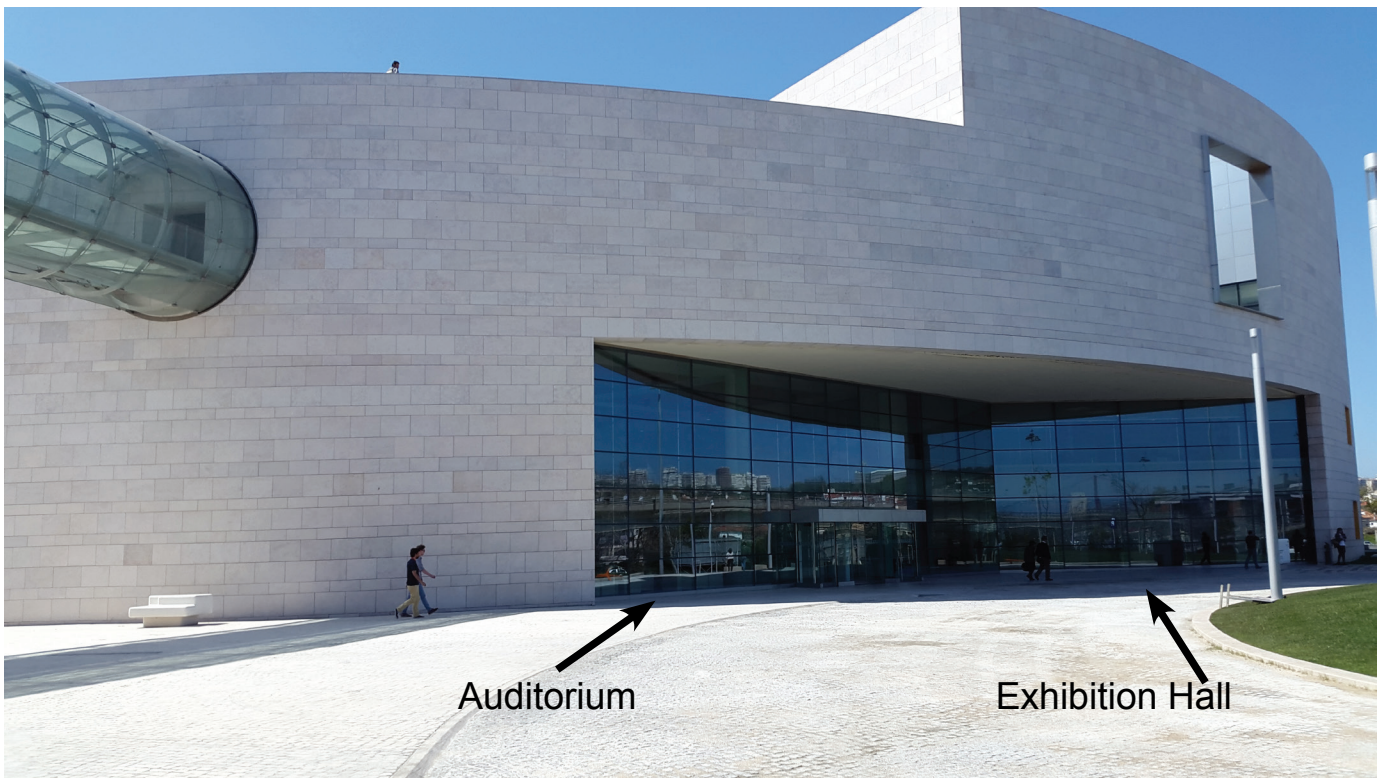




17th HFSP Awardees Meeting
and
The Physics of Living Matter for Tomorrow
9 - 12 July, 2017

The Champalimaud Centre for the Unknown
Lisbon, Portugal





*Entrance to the auditorium and exhibition hall
Champalimaud Centre for the Unknown*

Practical Information

Meeting venue

The meeting will be held in the auditorium of the Champalimaud Centre for the Unknown (CCU) located at Avenida Brasília, Doca de Pedrouços, 1400-038 Lisbon, Portugal.

Conference hotels

Altis Grand Hotel, Rua Castilho, 11, 1269-072 Lisbon, Tel: +351 213 106 000

Altis Suites, Rua Castilho, 13, 1250-066 Lisbon, Tel: +351 210 456 101

See the map on inside of back cover for location of hotels.

Transport

The following shuttles will be provided for meeting delegates:

Day	Morning	Evening
Sunday, 9 July	08:00 Altis Grand Hotel to CCU	17:15 CCU to Altis Grand Hotel
Monday, 10 July	07:50 Altis Grand Hotel to CCU	18:30 CCU to Estufa Real 21:30, 21:45, 22:00 Estufa Real to Altis Grand Hotel
Tuesday, 11 July	08:00 Altis Grand Hotel to CCU	No buses
Wednesday, 12 July	08:00 Altis Grand Hotel to CCU	18:45 CCU to Altis Grand Hotel

Please refer to the Venue and Travel section of the meeting website for information on public transport from the airport to the Altis Grand Hotel and from the hotel to the CCU.

Registration

Saturday, 8 July (14:00 – 18:00)

The lobby of the Altis Grand Hotel

Sunday, 9 July - Monday, 10 July (8:00 – 17:30)

CCU auditorium foyer

Tuesday, 11 July - Wednesday, 12 July (8:45 – 17:30)

CCU auditorium foyer

Plenary lectures and oral sessions

The scientific sessions will take place in the auditorium of the Champalimaud Centre for the Unknown. A technical assistant is available to assist speakers with loading their presentation slides. An LCD projector connected to a computer which supports Windows and Macintosh is available in the auditorium. You can also connect your own Mac or PC to the projector. If you have a Mac you should bring an adaptor to connect to the projector. There will be an audio-video check prior to your presentation. Please report to the registration desk on the morning of your talk for instructions.

If you are giving a 3-minute poster talk please bring your presentation on a USB memory stick so that it can be copied on to a single computer. You can copy your presentation on to the master computer during the morning coffee break or at the latest during the lunch break on the day of your talk.

Poster sessions

The poster sessions will take place in the Exhibition Hall next to the auditorium. The poster stand dimensions are 94 x 191 cm (w x h). Please refer to the poster listing in the meeting programme for the number and time of your presentation. Posters should be mounted on the stand corresponding to your number during the morning coffee break or lunch break on the day of presentation and removed following the poster session. There will be no printing service available at the conference venue. Please make sure that you print your poster in advance.

Lunch and coffee breaks

Lunch and coffee breaks will be served in the Exhibition Hall and the auditorium foyer and/or the mezzanine.

There will be an opportunity to meet the HFSP Council of Scientists and Review Committee Chairs over lunch on Tuesday, 11 July. This is an occasion to discuss the challenges in your career with the Council and to help them in their role of advising on the HFSP scientific programmes. There will be tables reserved for the Council members and RC Chairs and you are welcome to join them on a first-come-first-served basis.

Social programme

<i>Sunday, 9 July, 19:00</i>	Welcome reception, Rio de Janeiro room, Altis Grand Hotel
<i>Monday, 10 July, 19:30</i>	Reception at the Estufa Real, Jardim Botânico da Ajuda, Calçada do Galvão, 1400-171 Lisbon
<i>Wednesday, 12 July, 19:30</i>	Farewell reception, Rio de Janeiro room, Altis Grand Hotel

Wifi

A free wifi service is available at the venue. This can be accessed with the username/ password: guestneuro01/guestneuro25102011.

Photography

Many awardees show unpublished data. You should not take photographs of slides with data during oral presentations or of posters without permission from the authors.

Social media

We encourage you to write about the meeting on your blog, on Facebook or on Twitter. If you use Twitter, please include the tag #HFSPmtg in your tweets. However, since awardees often show unpublished data, you should not broadcast results without permission from the authors.

The Physics of Living Matter for Tomorrow

An international workshop in association with the 17th HFSP Awardees Meeting.

Sunday, 9 July

9:00-9:10	Welcome <i>Warwick Anderson, HFSP</i>
9:10-9:30	Introduction to the goals of the workshop <i>Daniel Riveline, University of Strasbourg, France</i> <i>Karsten Kruse, University of Geneva, Switzerland</i>
9:30-10:30	Invited Lecture Physics meets biology in the fly embryo – an adventure story <i>William Bialek, Princeton University, USA and Eric Wieschaus, Princeton University, USA</i>

10:30-11:00	Coffee break
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Research and training programs for physics in the life sciences

11:00-11:30	Teaching theory to biologists <i>Jane Kondek, Department of Physics, Brandeis University, Waltham, USA;</i> <i>Cold Spring Harbor Laboratory, USA; Marine Biology Laboratory, Woods Hole, USA</i>
11:30-12:00	A new Cell Physics Master: an integrated training year at the interfaces for scientific graduate students <i>Daniel Riveline, University of Strasbourg, France</i>
12:00-12:30	Developing an interdisciplinary bootcamp for incoming graduate students in the biosciences <i>Timothy Saunders, Mechanobiology Institute, Singapore</i>

12:30-13:30	Panel discussion
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13:30-14:30	Lunch
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Physical approaches in biological research

14:30-14:55	Beyond Turing: mechanochemical basis of pattern formation in active biological materials <i>Nikta Fakhri, Massachusetts Institute of Technology, USA</i>
14:55-15:20	Decoding of precise position in the developing neural tube from antiparallel morphogen gradients <i>Anna Kicheva, Institute of Science and Technology, Klosterneuburg, Austria</i>
15:20-15:45	Possible and impossible cells <i>Mukund Thattai, National Centre for Biological Sciences, Bangalore, India</i>
15:45-16:10	Physics-Biology interface in the study on ATP synthase <i>Hiroyuki Noji, University of Tokyo, Japan</i>

16:10-17:00	Panel discussion
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19:00	Awardees Meeting welcome reception - Altis Grand Hotel, Rio de Janeiro Room <i>Buses depart at 17:15</i>
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17th HFSP Awardees Meeting

Monday, 10 July

8:45-9:00 **Opening remarks and welcome address**
Leonor Beleza, President, Champalimaud Foundation
Warwick Anderson, Secretary General, HFSP

9:00-9:15 **Nakasone Award ceremony**
Introduction by *Nobutaka Hirokawa*, President of HFSP

The 2017 HFSP Nakasone Lecture

9:15-10:15 **Natural products as probes of the pain pathway: from physiology to atomic structure**
David Julius, Department of Physiology, University of California, San Francisco, USA

10:15-10:45 **Coffee break**

Oral Session 1 (Chair: Gabrielle Belz)

10:45-11:05 **Visual control of flight modes and transitions in birds**
Lentink, David, Srinivasan, M., Altshuler, D.L.
2013 Program Grant

11:05-11:25 **An extracellular RNA interference pathway as a mechanism of parasite-host communication**
Buck, Amy H., Chow, F., Ovando-Vázquez, C., Maity, T., Bermúdez-Barrientos, J.R., Koutsovoulos, G., Blaxter, M., Abreu-Goodger, C., Claycomb, J.
2014 Young Investigator Grant

11:25-11:45 **Synthetic embryology**
Sorre, Benoit
2015 Career Development Award

11:45-12:05 **A sex pheromone mitigates the attraction of starved flies to a food odor**
Mersch, Danielle P., Jefferis, G.S.X.E.
2014 Long-Term Fellow

12:05-13:20 **Lunch**

Oral Session 2 (Chair: Yunje Cho)

13:20-13:40 **Light on an ancestral sensory interface linking cerebrospinal fluid to motor circuits in vertebrates**
Böhm, U., Djenoune, L., Fidelin, K., Prendergast, A., Hubbard, J., Sternberg, J., Knafo, S., Tseng, P-E., Desban, L., Brosse, L., Banerjee, S., Delmas, P., Lewis, K., Bardet, P-L., *Wyart, Claire*
2014 Program Grant

13:40-14:00 **Building a barrier: survival of the fittest in the developing skin**
Ellis, Stephanie J., Fuchs, E.
2015 Long-Term Fellow

- 14:00-14:20 **Evolution of early genetic instability by single-hit mutations**
Coelho, Miguel, Murray, A.W.
2014 Long-Term Fellow
- 14:20-14:40 **Towards a spatiotemporal control of mRNA translation using magnetic nanoparticles: insights from *in vitro* studies**
Kashida, S., Wang, D.O., Saito, H., **Gueroui, Zoher**
2014 Program Grant

Poster Talks 1 (Chair: Allan Herbison)

- 14:40-14:43 **Single-molecule studies of ribosome assembly: coupling transcription and assembly**
Geffroy, L., Melkonyan, L., Bizebard, T., **Bockelmann, Ulrich**, Biebricher, A., Peterman, E., Nikolay, R., Amikura, K., Aoyama, R., Ueda, T.
2014 Program Grant
- 14:43-14:46 **Jumping spider rhodopsin: a new tool for optogenetics in GPCR signaling**
Lesca, E., Mutt, E., Varma, N., Terakita, A., Lucas, R.J., Deupi, X., **Schertler, Gebhard F.X.**
2014 Program Grant
- 14:46-14:49 **From multi-modal sensory perception to foraging decision making - the bat's point of view**
Yovel, Yossi, Page, R., Surlykke, A., Hallam, J., Moss, C.
2013 Program Grant
- 14:49-14:52 **Relating brain and behavior: the neural basis of modality specific attention**
Town, S.T., Stitt, I., Nordmark, J.K.A., Frohlich, F., **Bizley, Jennifer K.**
2014 Young Investigator Grant
- 14:52-14:55 **Rapid evolution of the *Drosophila* dosage compensation complex**
Keller Valsecchi, Claudia, Basilicata, M.F., Georgiev, P., Dasmeh, P., Holz, H., Akhtar, A.
2014 Long-Term Fellow
- 14:55-14:58 ***In silico* and *in vivo* interrogation of a fear memory functional connectome in mice**
Kenney, Justin W., Vetere, G., Tran, L., Xia, F., Steadman, P.E., Parkinson, J., Jossenlyn, S.A., Frankland, P.W.
2014 Long-Term Fellow
- 14:58-15:01 **Loss of microglia homeostasis triggers sterile CNS inflammation and neurodegeneration**
Rubino, Stephen J., Mayo, L., Lanser, A., Madi, A., Rezende, R.M., Butovsky, O., Lassmann, H., Weiner, H.L.
2014 Long-Term Fellow
- 15:01-15:04 **How the brain learns complex movements**
Wolff, Steffen B.E., Dhawale, A.K., Ko, R., Ölveczky, B.P.
2014 Long-Term Fellow
- 15:04-15:07 **Inorganic voltage nanosensors**
Park, J., Kuo, Y., Li, J., Ludwig, A., Park, K., Shvadchak, V., Ingargiola, A., Oron, D., Enderlein, J., Triller, A., **Weiss, Shimon**
2015 Program Grant
- 15:07-15:10 **Multi-pass microscopy for structural biology**
Juffmann, Thomas, Koppell, S.A., Klopfer, B.B., Ophus, C., Glaeser, R., Kasevich, M.A.
2016 Cross-Disciplinary Fellow

15:10-15:13 **Single-cell dynamics of growth and homeostasis in intestinal organoids**
Huelsz-Prince, G., Louzame Rouano, J., **Van Zon, Jeroen S.**
2014 Career Development Award

15:20-17:15 **Poster Session 1**
(with refreshments)

Invited Lecture (Chair: Warwick Anderson)

17:15-18:15 **From changes in cell shape to global tissue flows: a mechanical approach**
Eric Wieschaus, Princeton University, USA

19:30 **Dinner reception at the Estufa Real**
Buses depart at 18:30

Tuesday, 11 July

Invited Lecture (Chair: Warwick Anderson)

9:00-10:00 **Thinking about a thousand neurons**
William Bialek, Princeton University, USA

Oral Session 3 (Chair: Anjon Audhya)

10:00-10:20 **Foot in motion: materials, mechanics and control**
Venkadesan, Madhusudhan, Bandi, M.M., Mandre, S.
2013 Young Investigator Grant

10:20-10:40 **Probing and controlling single neuron synaptic function in the brain with light, intrabodies and sensors**
Gross, G.G., Perez-Sanchez, J., De Koninck, P., De Koninck, Y., Griesbeck, O., Arnold, Don B.
2014 Program Grant

10:40-11:00 **Coffee break**

11:00-11:20 **Dissecting the mechanochemistry of membrane invagination with designer DNA-based probes**
Krishnan, Yamuna, Johannes, L., Bathe, M., Ipsen, J.H.
2014 Program Grant

11:20-11:40 **Direct *in vivo* CRISPR delineates importance of actomyosin dynamics in cancer**
Langille, E., Loganathan, S., Schramek, Daniel
2015 Career Development Award

11:40-12:00 **Towards self-reproduction of protocells and minimal cells: evolution versus engineering**
Ott, Albrecht, Libchaber, A.J., Maeda, Y., Noireaux, V.
2015 Program Grant

12:00-13:10 **Lunch**
with the opportunity to meet the HFSP Council of Scientists and Review Committee Chairs

Oral Session 4 (Chair: Apurva Sarin)

13:10-13:30 **The life and times of malaria parasites: circadian rhythms in within-host behaviours and development**
Mideo, Nicole, Maier, B., Savill, N., Reece, S.E.
2013 Program Grant

13:30-13:50 **Understanding the role of electrical and mechanical cell-cell coupling during human heart muscle formation and disease**
Feinberg, Adam W., van der Meer, P.
2014 Young Investigator Grant

13:50-14:10 **Spatial regulation of synapse formation by Plexin signaling in *C. elegans***
Mizumoto, Kota, Chen, K.C.
2014 Career Development Award

Oral Session 5 (Chair: Hendrik Stunnenberg)

14:10-14:30 **Of flows, forms and functions: a (perfect) day in the life of a microbe**
Sengupta, Anupam
2014 Cross-Disciplinary Fellow

14:30-14:50 **The role of meiotic recombination in adaptive evolution**
Harjunmaa, Enni, Venu, V., Jones, F.C.
2015 Long-Term Fellow

14:50-15:10 **The conquest of the Arctic: a genetic journey**
Fumagalli, Matteo, Moltke, I., Racimo, F., Albrechtsen, A., Nielsen, R.
2014 Long-Term Fellow

15:10-15:30 **Processive motility of multi-motor kinesin-14 teams underlies regulation of microtubule minus-end dynamics**
Norris, S.R., Strothman, C., Ohi, R., **Zanic, Marija**
2014 Career Development Award

Poster Talks 2 (Chair: Philip Avner)

15:30-15:33 **Dissecting central pathways of oxytocin signaling in the brain**
Wagner, Shlomo, Hansel, D., Buxbaum, J.D., Grinevich, V.
2015 Program Grant

15:33-15:36 **The *Arabidopsis* NPF3 protein is a GA transporter**
Tal, I., Zhang, Y., Jørgensen, M.E., Pisanty, O., Barbosa, I.C.R., Zourelidou, M., Regnault, T., Crocoll, C., Olsen, C.E., Weinstain, R., Schwechheimer, C., Halkier, B.A., **Nour-Eldin, Hussam H.**, Estelle, M., Shani, E.
2015 Young Investigator Grant

15:36-15:39 **Molecular engineering and nonlinear imaging of nanoscale acoustic biomolecules**
Maresca, David, Lakshmanan, A., Lee-Gosselin, A., Melis, J.M., Ni, Y.L., Bourdeau, R.W., Kochmann, D.M., Shapiro, M.G.
2016 Cross-Disciplinary Fellow

15:39-15:42 **Evolution of attraction in the olfactory system**
Auer, Thomas, Lucarelli, G., Khallaf, M.A., Knaden, M., Benton, R.
2015 Long-Term Fellow

15:42-15:45 **Deep two-photon calcium imaging in the barrel cortex of the mouse**
Bethge, Philipp, Chen, J.L., Voigt, F.F., Helmchen, F.
2015 Long-Term Fellow

15:45-15:48 **Deciphering the biological role and molecular mechanism of germline de-differentiation in flies**
Herrera, Salvador, Bach, E.
2015 Long-Term Fellow

15:48-15:51 **In vivo 2-photon imaging on freely behaving mice with Rett Syndrome**
Artoni, Pietro, Ewall, G., Hensch, T., Fagiolini, M.
2015 Cross-Disciplinary Fellow

- 15:51-15:54 **Dynamic biofilm architecture confers individual and collective mechanisms of phage protection**
 Vidakovic, L., Singh, P.K., Hartmann, R., Nadell, C., ***Drescher, Knut***
2015 Career Development Award
- 15:54-15:57 **Cell lineage perspectives of scar tissue development and diversity**
Rinkevich, Yuval
2016 Career Development Award
- 15:57-16:00 **Fluorescence lifetime imaging microscopy reveals rerouting of SNARE trafficking driving immune cell activation**
 Verboogen, D.R.J., Mancha, N.G., ter Beest, M., ***van den Bogaart, Geert***
2014 Career Development Award
- 16:00-16:03 **Non-equilibrium control of protein assembly by genetic circuits**
 Morris, E., Jensen, M., Nash, M., ***Tan, Cheemeng***
2015 Young Investigator Grant
- 16:10-18:00 **Poster Session 2**
(with refreshments)

Wednesday, 12 July

Oral Session 6 (Chair: Theodor Landis)

- 9:00-9:20 **The image forming mirror in the eye of the scallop**
Palmer, Benjamin A., Taylor, G.J., Brumfeld, V., Gur, D., Shemesh, M., Elad, N.,
Oron, D., Weiner, S., Addadi, L.
2015 Cross-Disciplinary Fellow
- 9:20-9:40 **Climbing favors the tripod gait over alternative faster insect gaits**
Ramdy, Pavan, Thandiackal, R., Cherney, R., Asselborn, T., Benton, R.,
Jan Ijspeert, A., Floreano, D.
2016 Career Development Award
- 9:40-10:00 **Evolutionary genetics of plant-microbe interactions in natural populations**
Lundberg, Derek S., Kersten, S., Regalado, J., Karasov, T., Friedemann, C., Jolic, D.,
Shirsekar, G., Weigel, D.
2015 Long-Term Fellow
- 10:00-10:20 **Autophagy is necessary for the integration of novel hippocampal-dependent memory**
Glatigny, M., Moriceau, S., Ramos-Brossier, M., Rousseaud, A., Nascimbeni, A., Settembre, C.,
Morel, E., Codogno, P., *Oury, Franck*
2014 Career Development Award
- 10:20-10:40 **Gut feelings: engineering synthetic bacterial circuits to functionally probe the mammalian gut microbiome**
Riglar, David T., Potvin-Trottier, L., Giessen, T.W., Baym, M., Kerns, S.J., Niederhuber, M.J.,
Bronson, R.T., Kotula, J.W., Gerber, G.K., Paulsson, J., Way, J.C., Silver, P.A.
2014 Long-Term Fellow

10:40-11:10 **Coffee break**

- 11:10-12:00 **Open session: meet the staff of HFSP**

12:00-13:10 **Lunch**

Oral Session 7 (Chair: Vickery Arcus)

- 13:10-13:30 **Physical basis of insects' wings transparency**
Berthier, Serge, Elias, M., Patel, P., Andraud, C., Gomez, D.
2016 Program Grant
- 13:30-13:50 **Tailoring upconversion luminescent for biology**
Ma, Y., An, K., Zhang, Y., Kendra, T., Zhang, M., Zhao, H., Bao, J., Zhang, J., Wu, X., Li, Z.,
Xue, T., *Han, Gang*, Xiang, Y.
2014 Young Investigator Grant
- 13:50-14:10 **Selective elimination of iPS cells via enzyme catalyzed self-assembly of peptide derivatives**
Kuang, Yi, Miki, K., Parr, C.J.C., Li, J., Yoshida, Y., Saito, H.
2014 Cross-Disciplinary Fellow

14:10-14:30 **Establishing microfluidic cell-free systems for the rapid characterization of genetic networks**
Murray, R.M., **Maerkl, Sebastian J.**
2015 Program Grant

Poster Talks 3 (Chair: Daniela Rhodes)

14:30-14:33 **Predictive modelling of how pathogen-vector-host interactions drive complex large-scale patterns of infection**
Marée, Athanasius F.M., Tomkins, M., Immink, R., Groves, R., Zwolińska, A., Hogenhout, S.
2015 Program Grant

14:33-14:36 **Design of multi-cellular self-organizing structures with synthetic cell-cell communication inducing cell adhesion**
Toda, Satoshi, Morsut, L., Lim, W.
2016 Long-Term Fellow

14:36-14:39 **The second brain connectome: the organization of enteric neural circuits by microflora-immune axis**
Obata, Yuuki, Murray, A., Pachnis, V.
2016 Long-Term Fellow

14:39-14:42 **How do the semicircular canals of the inner ear form?**
Munjal, Akankshi, Megason, S.
2016 Long-Term Fellow

14:42-14:45 **Computational design of self-assembling protein nanomachines**
Courbet, Alexis, Wei, K., Nattermann, U., Moyer, A., Hsia, Y., Ueda, G., Fallas, J., Boyken, S., Ceze, L., Daniel, T., Smith, J., Bradley, P., Baker, D.
2016 Long-Term Fellow

14:45-14:48 **Gas vesicles: gas-filled proteins as reporters for noninvasive cellular imaging**
Shapiro, Mikhail G., Schröder, L.
2016 Program Grant

14:48-14:51 **Architecture and mechanics of the macrophage podosome**
Bouissou, A., Proag, A., Labernadie, A., Le Cabec, V., Bourg, N., Pingris, K., Balor, S., Thibault, C., Vieu, C., Lévêque-Fort, S., Poincloux, R., **Maridonneau-Parini, Isabelle**
2016 Program Grant

14:51-14:54 **Interactions among marine microbes as they grow and die: linking experiments and genome-scale models**
Grossart, Hans-Peter., Sher, D., Segre, D., Voss, M.
2016 Program Grant

14:54-14:57 **In depth two photon optogenetics with millisecond temporal resolution and single cell precision**
Emiliani, Valentina E., Boyden, E., Li, B., Katz, O.
2016 Program Grant

14:57-15:00 **The soft side of extra-cellular vesicles**
Sorkin, Raya, Huisjes, R., Vorselen, D., Ofir-Birin, Y., MacKintosh, F., Regev-Rudzki, N., Schiffelers, R., Wuite, G.
2015 Long-Term Fellow

15:00-15:03 **Active contractions in microtubule networks**
Fürthauer, Sebastian, Foster, P.J., Shelley, M.J., Needleman, D.J.
2014 Cross-Disciplinary Fellow

15:10-17:30 **Poster Session 3**
(with refreshments)

Invited Lecture (Chair: Warwick Anderson)

17:30-18:30 **Patents, litigation and inventors – changing times for scientists?**
The Hon. Dr. Annabelle Bennett AO SC, Bond University, Robina, Australia

19:30 **Farewell reception - Altis Grand Hotel, Rio de Janeiro room**
Buses depart at 18:45

Poster Presentations

Posters will be presented either on Monday, Tuesday or Wednesday. For each day, the posters are listed in alphabetical order by presenting author (in bold italics), except where more than one member of a grant team has prepared a poster, in which case these are listed together.

Monday

1. **All-optical electrophysiology in the live mouse brain with enhanced rhodopsin based voltage sensors**
Adam, Y., Lou, S., Zhao, Y., Brinks, D., Wu, H., Kim, J.J., Mostajo Radji, M.A., Chettih, S., Harvey, C.D., Zeng, H., Arlotta, P., Campbell, R.E., Cohen, A.E.
2. **Uncoupling stem cell proliferation, differentiation and migration during wound healing**
Aragona, M., Dekoninck, S., Rulands, S., Lenglez, S., Mascré, G., Simons, B.D., Blanpain, C.
3. **Complete cell lineage trees inferred by *in situ* genotyping of induced somatic mutations**
Grillo, M., Furth, D., Salvador-Martinez, I., Lee, J.H., Telford, M.J., **Averof, M.**
4. **Food cells in the hippocampus control feeding behavior in mice**
Azevedo, E.P., Friedman, J.M.
5. **Neural mechanisms of sensory integration and decision-making in larval zebrafish**
Bahl, A., Engert, F.
6. **Transverse curvature stiffens rayed fins of fish**
Nguyen, K., Yu, N., **Bandi, M.M.**, Venkadesan, M., Mandre, S.
7. **Contribution of the transverse arch to foot stiffness in humans**
Yawar, A., Korpas, L.M., Lugo-Bolanos, M., **Mandre, S.**, Venkadesan, M.
8. **Control and stability of running on rough terrains**
Dhawale, N., Mandre, S., **Venkadesan, M.**
9. **Extended synaptotagmin-mediated endoplasmic reticulum-plasma membrane contact sites**
Bian, X., Saheki, Y., Zhang, Z., Lin, C., De Camilli, P.
10. **Relating brain and behavior: the neural basis of modality specific attention**
Town, S.T., Stitt, I., Nordmark, J.K.A., Frohlich, F., **Bizley, J.K.**
11. **The role of thyroid hormones in zebrafish gut homeostasis**
Blitz, E., Appelbaum, L., Stainier, D.
12. **Characterization of intra-macrophage drug-tolerant *M. tuberculosis* at the single cell level**
Bloom-Ackermann, Z.R., Hung, D.T.
13. **Single-molecule studies of ribosome assembly: coupling transcription and assembly**
Geffroy, L., Melkonyan, L., Bizebard, T., **Bockelmann, U.**, Biebricher, A., Peterman, E., Nikolay, R., Amikura, K., Aoyama, R., Ueda, T.
14. **Ribosome assembly studied by single-molecule force measurements**
Geffroy, L., Bizebard, T., **Bockelmann, U.**, Amikura, K., Aoyama, R., Ueda, T.
15. **Structural analysis of assembly intermediates of the large ribosomal subunit**
Nikolay, R., Hilal, T., Qin, B., Bürger, J., Mielke, T., Lörke, J., Nierhaus, K.H., Spahn, C.M.

16. **Antigen-mediated T cell arrest: the role of mechanical forces**
Chabaud, M., Gaus, K.
17. **Human artificial chromosomes that shuttle between yeast and mammalian cells**
Chan, Y.A., Brown, D.M., Glass, J.I., Way, J.C., Silver, P.A.
18. **Localization of cell adhesion points using dual color MIET**
Chizhik, A.M., Wollnik, C., Ruhlandt, D., Chizhik, A.I., Karedla, N., Haehnel, D., Gregor, I., Rehfeldt, F., Enderlein, J.
19. **Inorganic voltage nanosensors**
Park, J., Kuo, Y., Li, J., Ludwig, A., Park, K., Shvadchak, V., Ingargiola, A., Oron, D., Enderlein, J., Triller, A., **Weiss, S.**
20. **Ferroptosis: mechanisms, relevance and therapeutic potential**
Kagan, V.E., Klein-Seetharaman, J., Ursini, F., **Conrad, M.**
21. **Tomography of viral glycoproteins**
Demers, J.P., Barthesagi, A., Tran, E.E., Kuybeda, O., Subramaniam, S.
22. **Polarized endosome dynamics by spindle asymmetry during asymmetric cell division**
Derivery, E., Seum, C., Daeden, A., Loubéry, S., Holtzer, L., Jülicher, F., Gonzalez-Gaitan, M.
23. **Mechanisms of virus-vector interactions mediating disease transmission**
Drucker, M., Ducouso, M., Then, C., Berthelot, E., Ng, J.C.K., Zhou, J.S., Butt, H.-J., Koynov, K., Schönecker, C.
24. **A novel platform to select and generate DNA-barcoded affinity binders for protein FISSEQ**
Fang, N.N., Griswold, K., Church, G.M.
25. **The effect of ethanol metabolism on the gut microbiota and the immune system**
Fonseca Pereira, D., Glickman, J.N., Garrett, W.S.
26. **Experimentally evolving biological novelty during adaptive radiation of budding yeast**
Fumasoni, M., Murray, A.W.
27. **An inexpensive, open, scalable, versatile array recording system for bio-acoustic applications in air**
Andreassen, T., Geipel, I., Page, R., **Hallam, J.**
28. **From multi-modal sensory perception to foraging decision making - the bat's point of view**
Yovel, Y., Page, R., Surlykke, A., Hallam, J., Moss, C.
29. **Multi-pass microscopy for structural biology**
Juffmann, T., Koppell, S.A., Klopfer, B.B., Ophus, C., Glaeser, R., Kasevich, M.A.
30. **Rapid evolution of the *Drosophila* dosage compensation complex**
Keller Valsecchi, C., Basilicata, M.F., Georgiev, P., Dasmeh, P., Holz, H., Akhtar, A.
31. ***In silico* and *in vivo* interrogation of a fear memory functional connectome in mice**
Kenney, J.W., Vetere, G., Tran, L., Xia, F., Steadman, P.E., Parkinson, J., Jossenlyn, S.A., Frankland, P.W.
32. **Adapting metazoan opsins for optogenetic applications**
Lucas, R.J., Ballister, E., Cehajic-Kapetanovic, J., Deupi, X., Gerrard, E., Koyanagi, M., Lesca, E., Mutt, E., Nagata, T., Rodgers, J., Shen, B., Varma, N., Schertler, G., Terakita, A.
33. **Jumping spider rhodopsin: a new tool for optogenetics in GPCR signaling**
Lesca, E., Mutt, E., Varma, N., Terakita, A., Lucas, R.J., Deupi, X., **Schertler, G.F.X.**
34. **Molecular properties of animal non-visual opsins and their optogenetic potentials**
Shen, B., Nagata, T., Wada, S., Kamimura, S., Kage-Nakada, E., Lucas, R.J., Schertler, G., Koyanagi, M., **Terakita, A.**

35. **Lymphatic endothelial cells control initiation of lymph node organogenesis**
Onder, L., Mörbe, U., Pikor, N., Novkovic, M., Cheng, H.-W., Hehlhans, T., Pfeffer, K., Becher, B., Waisman, A., Rüllicke, T., Gommerman, J., Scandella, E., **Ludewig, B.**
36. **Loss of microglia homeostasis triggers sterile CNS inflammation and neurodegeneration**
Rubino, S.J., Mayo, L., Lanser, A., Madi, A., Rezende, R.M., Butovsky, O., Lassmann, H., Weiner, H.L.
37. **Single-cell dynamics of growth and homeostasis in intestinal organoids**
Huelsz-Prince, G., Louzame Rouano, J., **Van Zon, J.S.**
38. **How the brain learns complex movements**
Wolff, S.B.E., Dhawale, A.K., Ko, R., Ölveczky, B.P.

Tuesday

1. **In vivo 2-photon imaging on freely behaving mice with Rett Syndrome**
Artoni, P., Ewall, G., Hensch, T., Fagiolini, M.
2. **Evolution of attraction in the olfactory system**
Auer, T.O., Lucarelli, G., Khallaf, M.A., Knaden, M., Benton, R.
3. **Pan-cancer analysis of aneuploidy and copy number alterations in patient-derived xenografts**
Ben-David, U., Ha, G., Tseng, Y.-Y., Oh, C., Shih, J., Wong, B., Boehm, J.S., Beroukhi, R., Golub, T.R.
4. **Computational design of hierarchically-assembled multi-component 2D protein functional materials**
Ben-Sasson, A.J., Bale, J.B., Nattermann, U., King, N.P., Sheffler, W., Baker, D.
5. **Deep two-photon calcium imaging in the barrel cortex of the mouse**
Bethge, P., Chen, J.L., Voigt, F.F., Helmchen, F.
6. **Dynamic biofilm architecture confers individual and collective mechanisms of phage protection**
Vidakovic, L., Singh, P.K., Hartmann, R., Nadell, C., **Drescher, K.**
7. **RNA memories: trans-generational epigenetic inheritance of RNA-mediated gene silencing**
Lewis, A., Sarov, M., Miska, E., **Duchaine, T.F.**
8. **Exploring the mitochondria and metabolism of germ cells**
Eastwood, M.D., Priess, J.R.
9. **Comparative transcriptomics of blood stem cells between human, mouse and the tumor-resistant naked mole rat**
Emmrich, S., Ke, Z., Seluanov, A., Gorbunova, V.
10. **Hematopoiesis along a phenotypic continuum**
Erez, A., Altan-Bonnet, G.
11. **Investigating prostate cancer lineage plasticity using genomically engineered LNCAP cells**
Golomb, L., Meyerson, M., Garraway, L.
12. **Membrane neurotransmitter cross-talk in the physiopathological brain**
Groc, L.
13. **Synaptic Ras-GTPase activating protein facilitates dopamine D1 receptor-mediated GABAergic interneuron migration**
Su, P., Lee, F.H.F., Xie, Y.F., **Liu, F.**

14. **Nuclear actin assembly promotes mitotic chromatin decondensation**
Grosse, R., Kaidi, A., Miyamoto, K.
15. **Neural mechanisms for novelty processing**
Morrens, J., Noutel, J., *Haesler, S.*
16. **Bioengineering of a microbial phenylpropanoid biosynthesis pathway**
Haslinger, K., Prather, K.L.J.
17. **Second messenger-mediated gene expression control driving cell cycle progression and morphogenesis in bacteria**
Hempel, A.M., von Arx, C., Nesper, J., Jorjani, H., Abel, S., Zavolan, M., Jenal, U.
18. **Deciphering the biological role and molecular mechanism of germline de-differentiation in flies**
Herrera, S., Bach, E.
19. **Rab5 and Alsin initiate stress-activated signaling on mitochondria during oxidative stress**
Hsu, F.H., Zerial, M.
20. **Role of intermediate progenitors in the specification of cortical projection neurons**
Huilgol, D., Levine, J.M., Wu, P., He, M., Huang, Z.J.
21. **Chemical synthesis of modified polyphosphates**
Singh, J., Steck, N., Captain, I., *Jessen, H.J.*
22. **A point-of-no-return leading to death in *C. elegans***
Jovic, K., Sterken, M.G., Grilli, J., Bevers, R.P.J., Rodriguez, M., Riksen, J.A.G., Allesina, S., *Kammenga, J.E.*, Snoek, L.B.
23. **The CEP19-RABL2 GTPase complex binds IFT-B to initiate intraflagellar transport at the ciliary base**
Kanie, T., Jackson, P.K.
24. **Optical recreation of *in vivo* spike patterns in *ex vivo* brain slices**
Seo, D.K., Tran, M.T., *Kohl, M.M.*, Kwag, J.H., Richards, B.A.
25. **Inhibitory control of neural code propagation in the feedforward network of vS1 *in vivo* and *in silico***
Jang, H.J., Kohl, M.M., Richards, B.A., *Kwag, J.H.*
26. **Revealing shared features of adaptation in visual and somatosensory cortex within a common framework**
Latimer, K., Li, B., Katz, Y., Nelken, I., Fairhall, A.L., *Lampl, I.*, Priebe, N.J.
27. **Specification of spinal cord cerebrospinal fluid contacting neurons**
Banerjee, S., Andrzejczuk, L.A., England, S., Djenoune, L., Prendergast, A., Wyart, C., *Lewis, K.E.*
28. **Characterization of zebrafish T cells harboring lymphoid organs and melanoma tumors**
Ludin, A., Beausang, J., Kapp, F., Yang, S., Zhou, Y., Quake, S.R., Zon, L.I.
29. **Molecular engineering and nonlinear imaging of nanoscale acoustic biomolecules**
Maresca, D., Lakshmanan, A., Lee-Gosselin, A., Melis, J.M., Ni, Y.L., Bourdeau, R.W., Kochmann, D.M., Shapiro, M.G.
30. **Functional integration of *in vivo* glia-to-neuron reprogramming in the mouse cerebral cortex**
Marichal, N., Péron, S., Azim, K., Karow, M., Berninger, B.

31. **Early programming of the oocyte epigenome temporally controls late prophase I transcription and chromatin remodeling**
Navarro-Costa, P., McCarthy, A., Prudêncio, P., Greer, C., Guilgur, L.G., Becker, J.D., Secombe, J., Rangan, P., **Martinho, R.G.**
32. **Nucleoporin TPR is a negative regulator of NPC number**
McCloskey, A., Ibarra, A., Hetzer, M.W.
33. **Adaptive antibody responses in mice and humans**
Papa, I., Saliba, D., Tas, J.M.J., Mesin, L., Doglioni, C., Binder, S., Robert, P., Siokis, A., Rastogi, A., Roco, J., Dustin, M.L., **Meyer-Hermann, M.**, Vitorica, G.D., Vinuesa, C.G.
34. **Synaptic vesicle clusters in nerve terminals: an example of liquid-liquid phase separation?**
Milovanovic, D., De Camilli, P.
35. **The *Arabidopsis* NPF3 protein is a GA transporter**
Tal, I., Zhang, Y., Jørgensen, M.E., Pisanty, O., Barbosa, I.C.R., Zourelidou, M., Regnault, T., Crocoll, C., Olsen, C.E., Weinstain, R., Schwechheimer, C., Halkier, B.A., **Nour-Eldin, H.H.**, Estelle, M., Shani, E.
36. **Cell lineage perspectives of scar tissue development and diversity**
Rinkevich, Y.
37. **Non-equilibrium control of protein assembly by genetic circuits**
Morris, E., Jensen, M., Nash, M., **Tan, C.**
38. **Fluorescence lifetime imaging microscopy reveals rerouting of SNARE trafficking driving immune cell activation**
Verboogen, D.R.J., Mancha, N.G., ter Beest, M., **van den Bogaart, G.**
39. **Dissecting central pathways of oxytocin signaling in the brain**
Wagner, S., Hansel, D., Buxbaum, J.D., Grinevich, V.

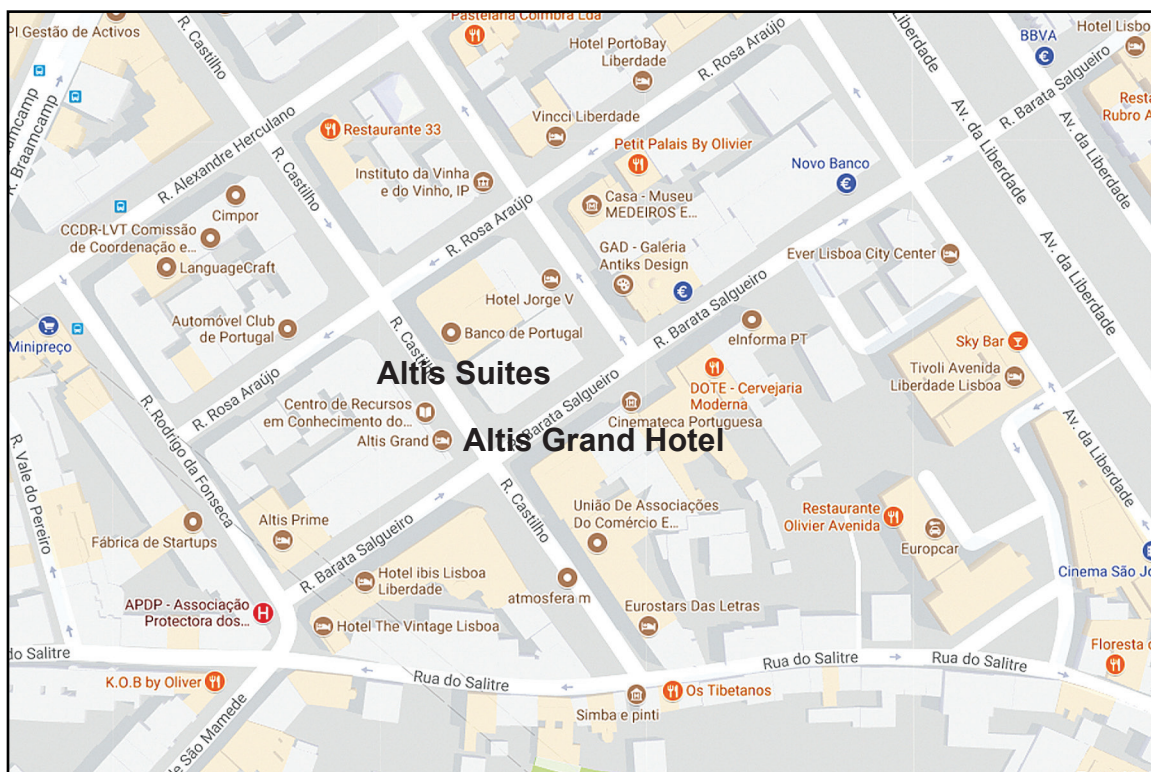
Wednesday

1. **Computational design of self-assembling protein nanomachines**
Courbet, A., Wei, K., Nattermann, U., Moyer, A., Hsia, Y., Ueda, G., Fallas, J., Boyken, S., Ceze, L., Daniel, T., Smith, J., Bradley, P., Baker, D.
2. **In depth two photon optogenetics with millisecond temporal resolution and single cell precision**
Emiliani, V.E., Boyden, E., Li, B., Katz, O.
3. **Active contractions in microtubule networks**
Fürthauer, S., Foster, P.J., Shelley, M.J., Needleman, D.J.
4. **Interactions among marine microbes as they grow and die: linking experiments and genome-scale models**
Grossart, H.-P., Sher, D., Segre, D., Voss, M.
5. **Predictive modelling of how pathogen-vector-host interactions drive complex large-scale patterns of infection**
Marée, A.F.M., Tomkins, M., Immink, R., Groves, R., Zwolińska, A., Hogenhout, S.
6. **Architecture and mechanics of the macrophage podosome**
Bouissou, A., Proag, A., Labernadie, A., Le Cabec, V., Bourg, N., Pingris, K., Balor, S., Thibault, C., Vieu, C., Lévêque-Fort, S., Poincloux, R., **Maridonneau-Parini, I.**
7. **Telling time with a noisy clock: timing precision of regulated gene expression**
Gupta, S., Varennes, J., Korswagen, H., **Mugler, A.**

8. **How do the semicircular canals of the inner ear form?**
Munjal, A., Megason, S.
9. **The second brain connectome: the organization of enteric neural circuits by microflora-immune axis**
Obata, Y., Murray, A., Pachnis, V.
10. **Molecular mechanism for plant developmental control by novel membrane receptors**
Okuda, S., Hothorn, M.
11. **The role of Alzheimer's disease risk gene TREM2 in human induced pluripotent stem cell-derived microglia**
Penney, J., Elmsaouri, S., Wen, H.S., Tsai, L.H.
12. **The structure of yeast tRNA ligase reveals a kinetic competition between non-conventional mRNA splicing and RNA decay**
Peschek, J., Walter, P.
13. **Immune modulatory drugs (hair)pin cancer proteins for destruction**
Petzold, G., Fischer, E.S., Thomä, N.H.
14. **Tubular membrane invagination induced by nanoparticles: binding, membrane curvature, nanoparticle clustering, and tube formation**
Pezeshkian, W., Hansen, A.G., Gao, H., Arumugam, S., Johannes, L., Khandelia, H., Shillcock, J.C., Ipsen, J.H.
15. **Spatial patterning and local translation of mRNAs**
Popovic, D., Pelkmans, L.
16. **Single cell transcriptomics reveal the regulatory dynamics of Olig2 and Hes transcription factors that control motor neuron differentiation**
Sagner, A., Gaber, Z., Delile, J., Kong, J., Rousso, D.L., Pearson, C.A., Weicksel, S.E., Mousavy Gharavy, S.N., Briscoe, J., Novitch, B.G.
17. **Multiplexed super-resolution imaging of nuclear organization using DNA-PAINT**
Saka, S.K., Beliveau, B.J., Sasaki, H., Dai, M., Schüder, F., Jungmann, R., Yin, P.
18. **DNA damage response mediated replication-stasis as a key regulator of stem cell quiescence and functional decline during ageing**
Salvi, J.S., van Velthoven, C., Rando, T.A.
19. **Using deep UV Raman spectroscopy to identify *in situ* microbial activity**
Sapers, H.M., Bhartia, R., Orphan, V.J., Wanger, G., Amend, J.
20. **Characterization of genetically expressible xenon-MRI contrast agents**
Schröder, L., Shapiro, M., Kunth, M., Lu, G.J., Witte, C.
21. **Gas vesicles: gas-filled proteins as reporters for noninvasive cellular imaging**
Shapiro, M.G., Schröder, L.
22. **Ontogenetic basis of a "salt-and-pepper" functional organization of the mouse visual cortex**
Shi, S.-H., Zhang, X.-J., Li, Y., Li, Z., Han, Z., Huang, K., Hippenmeyer, S., Simon, B.D.
23. **Wapl-mediated cohesin removal from chromosomes contributes to age-related egg aneuploidy**
Silva, M.C.C., Borsos, M., Ladstätter, S., Tedeschi, A., Peters, J-M., Tachibana-Konwalski, K.
24. **The soft side of extra-cellular vesicles**
Sorkin, R., Huisjes, R., Vorselen, D., Ofir-Birin, Y., MacKintosh, F., Regev-Rudzki, N., Schifferers, R., Wuite, G.

25. **The physics of social behavior in the three-dimensional shoaling of zebrafish**
Stephens, G.J., Shaevitz, J.W., Masai, I.
26. **Brain-wide 3D light-field microscopy with speckle enhanced resolution**
Taylor, M.A., Nöbauer, T., Pernia-Andrade, A., Schlumm, F., Vaziri, A.
27. **Lung-on-a-chip microtechnologies for single-cell studies of host-pathogen interactions with *M. tuberculosis***
Thacker, V.V., Barrille, R., Sharma, K., Karalis, K., Dhar, N., McKinney, J.D.
28. **Design of multi-cellular self-organizing structures with synthetic cell-cell communication inducing cell adhesion**
Toda, S., Morsut, L., Lim, W.
29. **Measuring the functional motions of individual protein molecules: gaining insights into an essential chaperone protein**
Tych, K.M., Jahn, M., Rief, M.
30. **Nature *via* nurture? Deciphering molecular mechanisms underlying transgenerational inheritance of environmentally-induced molecular and physiological adaptations in *C. elegans***
Vogt, M.C., Hobert, O.
31. **Genome-wide RNAi screen identifies novel genes involved in mitochondrial fission in *Caenorhabditis elegans***
Weij, W., Ruvkun, G.
32. **Single molecule, full-length transcript sequencing provides insight into extreme metabolism of ruby-throated hummingbird *Archilochus colubris***
Workman, R.E., Myrka, A.M., Tseng, E., *Wong, G.W.*, Welch Jr., K.C., Timp, W.
33. **Insights into the dynamics of the ketosteroid isomerase during its reaction cycle from room-temperature crystallography**
Yabukarski, F., Biel, J.T., Doukov, T., Fraser, J.S., Herschlag, D.
34. **Bridge over troubled synapses: synthetic extracellular protein scaffolds for neuronal connectivity**
Suzuki, K., Song, I., Elegheert, J., Clayton, A., Senkov, O., Chang, V., Ferrer, M., Kaushik, R., Aricescu, A.R., Dityatev, A., *Yuzaki, M.*
35. **Assessing the impact of s-palmitoylation on the lipidome of mammalian cells**
Zaballa, M.E., Paz-Montoya, J., Riezman, I., van der Goot, F.G.
36. **Imaging microtubule dynamics in the early mouse embryo**
Zenker, J., White, D.J., Plachta, N.
37. **The dynamics of synaptic remodeling: insights from the *C. elegans* motor circuit**
Mulcahy, B., Mitchell, J., Witvliet, D., Koh, W., Chang, M., Bermant, P., Holmyard, D., Schalek, R., Lichtman, J., Samuel, A., *Zhen, M.*
38. **The post-embryonic remodeling of the *C. elegans* wiring diagram**
Witvliet, D., Mitchell, J.K., Mulcahy, B., Cook, S.J., Schalek, R.L., Holmyard, D., Koh, W.X., Neubauer, M., Chang, M., Qu, A., Laskova, V., Berger, D.R., Qian, J., Kersen, D., Emmons, S.W., Hall, D.H., Chisholm, A.D., Lichtman, J.W., Samuel, A.D.T., *Zhen, M.*

Notes



Map of Lisbon showing the conference hotels



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