



Protein structures such as the one shown in the cover illustration can be resolved using X-ray crystallography and other techniques discussed at the 110th International Titisee Conference in October 2014. Advances in imaging are unlocking the secrets of molecules in motion. Read more in the interview with the two ITC chairs on page 8.

## FACTS

Science News ..... 4

### TURNING STILL LIFES INTO ACTION MOVIES

An interview with the two chairs of the 110th International Titisee Conference. .... 8

### WALKING THE GREEN OR THE GOLDEN ROAD

The success story of open access publishing in the sciences. .... 12

## FELLOWS

### NEW PHD PROJECTS, FIRST ROUND 2014

In March 2014, 14 applications for fellowships were approved and all were taken up. .... 15

### NEW PHD PROJECTS, SECOND ROUND 2014

In July 2014, 17 applications for fellowships were approved and all were taken up. .... 30

### PHD RESULTS

Twelve fellowship holders give brief accounts of their results. .... 48

## FOUNDATION

### PERSPECTIVES

From scientist to consumer marketing intelligence manager: Dr Shane Hanson. .... 56

### WHO'S WHO AT BIF

BIF team member Dr Anja Hoffmann answers the BIF questionnaire. .... 57

### THE PORTAL IS ONLINE

The portal for travel grant applications is now online. .... 57

### PAPERS IN THE SPOTLIGHT

Papers by BIF fellows Nicolas Brancucci, Allan-Hermann Pool, and Christoph Thaiss. .... 58

A BIF fellow's guide to ... Tel Aviv ..... 60

Profiles ..... 61

Upcoming events ..... 61

**FELLOWSHIPS** The Board of Trustees of the Boehringer Ingelheim Fonds includes six renowned scientists, the speaker of the Board of Managing Directors of the company Boehringer Ingelheim, and, as a permanent guest, a representative of the German Research Foundation (DFG). Their expert judgement characterizes the work of our foundation. The trustees meet three times a year to decide on the allocation of fellowships. In March 2014, they met in Mainz, Germany, to discuss 42 applications selected from the 214 submissions sent to the office by the February 2014 deadline. In the end, 14 applications were approved and all fellowships were taken up. In a separate section of this double issue, you will find the project descriptions decided upon at the Board of Trustees' meeting in July.

<b>S. ANDREI ANGHEL</b>	Defining a new family of eukaryotic membrane protein insertases	16
<b>GIOVANNA BRANCATI</b>	Target specificity among miRNA family members	17
<b>SILVIA DOMCKE</b>	Influence of DNA methylation on transcription factor binding	18
<b>MIRJAM HOEKSTRA</b>	How T cells talk to the neighbourhood	19
<b>FERDINAND HUBER</b>	Regulation of nucleocytoplasmic transport events involving mRNA	20
<b>LUKAS HUTTER</b>	Systems-level analysis of the mitotic checkpoint	21
<b>MARIOS G. KOLIOPOULOS</b>	Structural and functional analysis of TRIM E3 ubiquitin ligases	22
<b>MARTIN MICHEL</b>	Identifying novel, linkage-specific ubiquitin-binding domains	23
<b>CORENTIN MOEVUS</b>	Single-molecule studies of epigenetic mechanisms and inheritance	24
<b>DENNIS NESTVOGEL</b>	Functional dissection of CAPS-dependent synaptic vesicle priming	25
<b>MATTHEW PAUL</b>	Chromosome structure and meiotic double-strand break formation	26
<b>MARIA PLACENTINO</b>	Piwi-induced transgenerational gene silencing	27
<b>MADALENA REIMAO PINTO</b>	The role of TNases in the regulation of miRNA-mediated gene silencing	28
<b>CHRISTIAN SCHMIDT</b>	Structural analysis of non-stop mRNA and protein decay complexes	29

**FELLOWSHIPS** In July 2014, the Board of Trustees met in Boston, USA, to discuss 46 applications selected from the 236 submissions sent to the office by the June 2014 deadline. In the end, 17 applications were approved and all fellowships were taken up.

<b>MARIE BOCKSTALLER</b>	
Hunger lowers secretion to regulate behaviour in flies	31
<b>TELMA EMANUELA DA SILVA SANTOS</b>	
Axonal growth in three dimensions	32
<b>ARIS FISER</b>	
The role of spatial context in processing in primary visual cortex	33
<b>PATRICK FLAGMEIER</b>	
Nucleation mechanisms of $\alpha$ -synuclein aggregation	34
<b>LEA GOETZ</b>	
Single-neuron computation <i>in vivo</i>	35
<b>DOMINIK HARTL</b>	
Dissecting sequence determinants of CpG island promoter activity	36
<b>ROBERT HICKMAN</b>	
The magnetogenetic activation of neurons <i>in vivo</i>	37
<b>HAUKE HILLEN</b>	
Structural basis of transcription initiation in human mitochondria	38
<b>DOMINIK HOELPER</b>	
Silencing of endogenous retroviruses with histone variants	39
<b>REBECCA JORDAN</b>	
Context-dependent processing in the mouse olfactory bulb	40
<b>MATTHIAS MINDERER</b>	
Mechanisms of short-term memory in the neocortex	41
<b>JAMES PATTERSON</b>	
Noisy decision-making in the fission yeast cell cycle	42
<b>JULIA REINERT</b>	
Role of the Rif1 N-terminal domain in DNA homeostasis pathways	43
<b>KARL-UWE REUSSWIG</b>	
Exclusivity of DNA-replication phases at cell-cycle transitions	44
<b>ROSINA SAVISAAR</b>	
Constraints on protein evolution imposed by dual coding	45
<b>GERGANA SHIPKOVENSKA</b>	
Mitochondrial gene expression at single-nucleotide resolution	46
<b>JORGE ARTURO ZEPEDA MARTÍNEZ</b>	
Assessing the dynamics of polycomb-dependent heritable gene silencing	47

**RESULTS** The Boehringer Ingelheim Fonds funds excellent PhD students who are selected as much for their academic record as for their ambitious projects. Here they present a synopsis of their findings, which aim to push the boundaries of our knowledge of the fundamental phenomena of human life.

**SIGRID BLOM**

Plasticity in the anterior cingulate cortex of mice with chronic pain ..... 49

**TANER CAVLAR**

Species-specific differences of STING influence its ligand interaction ..... 49

**AMALIE ELISABETH DICK**

Kinetic framework of spindle assembly checkpoint signalling ..... 50

**KLAUS-DIETER HEGER**

Hyperactive mast cells exacerbate inflammatory responses *in vivo* ..... 50

**MAXIMILIAN KERN**

Cdc48-regulated chromatin ubiquitylation hotspots in *S. cerevisiae* ..... 51

**LOWRY A. KIRKBY**

Mechanisms of circuit plasticity in the developing retina ..... 51

**JAN ROTHER**

Inorganic janus particles: menace or opportunity? ..... 52

**CHRISTIAN SCHULZ**

A module swap in the TIM23 translocase drives mitochondrial matrix transport ..... 52

**NADIA SELLAMI**

Analysis of components of the replication and repair machinery in embryonic stem cells ..... 53

**SWATHI SRIVATSA**

The influence of Sip1 in establishing neocortical projections ..... 53

**DOMINIK STAPPERT**

Novel next-generation sequencing approaches to decipher a gene network in *Tribolium* ..... 54

**CARSTEN WLOKA**

Elucidating the mechanisms of cytokinesis in budding yeast and mammalian cells ..... 54

**THE FOUNDATION** The Boehringer Ingelheim Fonds (BIF) is a public foundation – an independent, non-profit organization for the exclusive and direct promotion of basic research in biomedicine. The foundation pays particular attention to fostering junior scientists. From the start it has provided its fellowship holders with more than just monthly bank transfers: seminars, events and personal support have nurtured the development of a worldwide network of current and former fellows.

#### PERSPECTIVES

From scientist to consumer marketing intelligence manager: Dr Shane Hanson. 56

#### WHO'S WHO AT BIF

BIF team member Dr Anja Hoffmann answers the BIF questionnaire. 57

#### THE PORTAL IS ONLINE

The portal for travel grant applications is now online. 57

#### PAPERS IN THE SPOTLIGHT

Papers by Nicolas M. B. Brancucci, Allan-Hermann Pool, and Christoph Thaiss. 58

#### A BIF FELLOW'S GUIDE TO ... TEL AVIV

BIF fellow Christoph Thaiss presents the Middle East metropolis that never sleeps. 60

#### PROFILES

What are they doing now? In this issue: Dr Felix Halbach, Prof. Hinrich Kaiser, Dr Alexander Tups, Prof. Andreas Wodarz, and four new EMBO members. 61

#### UPCOMING EVENTS

Communication training in Cold Spring Harbor, USA; meeting of BIF's Board of Trustees in Mainz, Germany; 111th International Titisee Conference, Lake Titisee, Germany. 61