

# MGSE Newsletter 01/2016

Activities & accomplishments at the Münster Graduate School of Evolution

MÜNSTER  
GRADUATE  
SCHOOL OF  
EVOLUTION

## Cooperation with Banco Santander extended until 2018



Banco Santander and the University of Münster are continuing their successful cooperation: On 27 January 2016, they signed an extension of the existing cooperation agreement which was formed in 2013 for another three years. In the course of this collaboration, Santander will proceed to support the Evolution Think Tank of the MGSE which promotes the development of a sustainable interdisciplinary research and education programme at the forefront of evolutionary research. With the help of Santander, the MGSE will be able to invite further internationally outstanding scientists from different disciplines as ETT-Fellows. They will closely inter-

act with the PhD students and PIs of the MGSE to develop new ideas and establish mechanisms for the transfer and application of evolutionary knowledge at the interface of life sciences and philosophy. In addition to the ETT, Santander will continue to support the international centre "Die Brücke", the WWU Graduate Centre, the "ProTalent" scholarship programme and as a special project the 'XIX Congreso Internacional de Hispanistas' in 2016 in Münster. Banco Santander is currently the largest investor in education in the world (Varkey/UNESCO report – Fortune 500) and holds collaboration agreements with more than 1,100 universities and institutions worldwide. On the occasion of three years support by 'Santander Universitäten', the University of Münster published a booklet summarizing activities and accomplishments between 2013 - 2015:

<http://www.uni-muenster.de/imperia/md/content/evolution/mgse/broschueresantander.pdf>

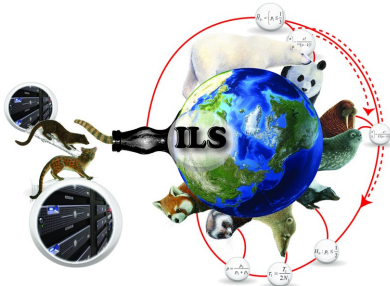
## MGSE PIs submitted proposal for DFG Research Training Group

After a successful draft proposal in 2015, a group of twelve researchers from the WWU submitted a full establishment proposal for a DFG Research Training Group on 'Evolutionary Processes in Adaptation and Disease' (RTG EvoPAD). Eleven out of the 12 participating researchers are PIs of the MGSE. The idea of EvoPAD is to use knowledge derived



from the theory of evolution to achieve a deeper understanding of the processes that are underlying adaptation and disease. If successful, EvoPAD will be supported by the framework for structured graduate student education at the University of Münster, including the MGSE. The on-site review for the RTG is expected to take place between June and September in Münster.

## Joint publication on retroposon insertion statistics



© Kuritzin et al.

MGSE PI Jürgen Schmitz and PhD student Tabea Kischka have been involved in the development of a comprehensive statistical framework for testing the significance of support for phylogenetic hypotheses derived from genome-level data and for evaluating possible retroposon presence/absence patterns for different evolutionary scenarios, including polytomy, incomplete lineage sorting, and ancestral hybridization. The new KKSC insertion significance test is especially important for the high-throughput applications of current and upcoming genome projects. It is available online in a user-friendly R-application: [http://retrogenomics.uni-muenster.de:3838/KKSC\\_significance\\_test/](http://retrogenomics.uni-muenster.de:3838/KKSC_significance_test/).

Kuritzin et al. (2016) Incomplete Lineage Sorting and Hybridization Statistics for Large-Scale Retroposon Insertion Data. *PLoS Comput Biol* 12: e1004812: <http://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1004812#sec010>

## Evolution of Viruses – Viruses in Evolution



On Saturday, 9 April 2016, the MGSE co-organized a plenary session on 'Evolution of Viruses - Viruses in Evolution' at the 26th Annual Meeting of the Society for Virology (GfV) that was held from 6 - 9 April in Münster and stood under the main theme 'Viruses in Motion'. The plenary session focussed on the evolutionary motion of viral pathogens including their role in evolution of higher organisms and included the following talks: Prof. Raul Andino (San Francisco, CA/US) – 'Mechanisms and consequences of RNA virus

micro-evolution', Prof. Martin Schwemmle (Freiburg, DE) - 'Reverse genetic analysis of the newly discovered bat influenza A-like viruses', Robert Belshaw (Plymouth, Devon/GB) – 'Paleovirology and our 100-million-year co-evolution with endogenous retroviruses'. The plenary session was complemented by a workshop session on virus evolution with short talks from submitted abstracts.

The Society for Virology (GfV) is by now the greatest virological community in Europe with currently 1,300 members and covers the field of virology from basic research to medical virology. Its annual meeting is the most important event for virologists in the German-speaking area and brings together around 1000 scientists from all over the world, ranging from young graduate students to international experts in the field. This year's meeting was hosted by the University of Münster with MGSE PI Stephan Ludwig as Conference Chair.

<http://www.uni-muenster.de/news/view.php?cmdid=8229>

### Three new PhD students joined the MGSE



In January, Alexandra Mutwill joined the MGSE as a PhD student. Alexandra works in the group of Norbert Sachser at the Department for Behavioural Biology. In her doctoral project she studies the effects of social niche specialisation and transition on biobehavioural profile and fitness in guinea pigs as model organism. The project is based on the observation that adaptive shaping of biobehavioural phenotypes can occur rapidly and repeatedly within a lifetime which raises the question of adaptive shaping even beyond adolescence.

<http://www.uni-muenster.de/Evolution/mgse/people/alexandramutwill.html>



In April, Nadja Haarmann joined the MGSE. She started her PhD in the research group of Alexander Mellmann at the Institute of Hygiene at the University Hospital Münster. In her PhD project she focusses on the impact of the pAA plasmid on virulence in an enterohemorrhagic *E. coli* (EHEC) strain to investigate possible regulation mechanisms modulated by pAA-encoded antisense RNA regarding virulence gene regulation. Nadja will determine the impact of pAA loss which can attenuate pathogenicity and is interested in the influence of the pAA plasmid on chromosomal gene regulation and what consequences follow after loss of the plasmid.

<http://www.uni-muenster.de/Evolution/mgse/people/nadjahaarmann.html>



Also in April, Marco Chittò was accepted as MGSE member. Marco works in the research group of Ulrich Dobrindt at the Institute of Hygiene at the University Hospital Münster. In his PhD project he will study the regulation and function of pathogenicity island (PAI)-encoded integrases in *E. coli*. He will use molecular techniques to determine under which growth conditions PAI-encoded integrase genes are optimally expressed and characterize the importance of regulatory factors involved in xenogenic silencing for regulation and functionality of individual PAI-encoded integrases.

<http://www.uni-muenster.de/Evolution/mgse/people/marcochitto.html>

*A warm welcome to our new members!*



## MGSE celebrates third graduate

In April, Diana Ferro successfully defended her PhD thesis entitled 'Evolution of antioxidant system genes in eukaryotes', supervised by Joachim Kurtz, Jürgen Schmitz and Gianfranco Santovito (University of Padova). For our newsletter Diana put in a nutshell: "During my PhD studies, I focussed my attention on the molecular characterization of antioxidant system genes from a multidisciplinary point of view. I used different models such as chordates (*Ciona intestinalis* and antarctic fish) and other metazoa (*Drosophila melanogaster* and protists). In particular, I focussed on three components of the enzymatic antioxidant system in the ciliated protozoa *Tetrahymena thermophila*, a model organism in molecular biology and genetics, and *Trematomus bernacchii*, a fish characterized by the capacity to survive in an extremely stressful environment of the Antarctic sea. In all these species and for all the antioxidant system components I studied the gene architecture, gene transcription and translation, and the resulting protein activity in order to gain comprehensive knowledge about the evolution and function of antioxidant genes." In addition to her PhD project, Diana was involved in a study on programmed DNA elimination in *Paramecium tetraurelia* in the Evolutionary Cell Biology group of Francesco Catania.

*We offer Diana our warmest congratulations and wish her all the best for the future!*

## Science Pub programme promises exiting talks for summer and autumn 2016

In May, the Science Pub series continues with interesting speakers from within and outside of Münster. Talks will take place on Mondays at 19.15 in the *Weinbar Idéal* :



|                         |   |
|-------------------------|---|
| <b>9 May 2016</b>       | Prof. Dr. Werner Härdtle (Institut für Ökologie, Universität Lüneburg): <i>Klimawandel und Nährstoffeinträge als weltweite Ursache des Artensterbens</i>  |
| <b>20 June 2016</b>     | Dr. Marcus Hartmann (Cilian AG, Münster): <i>Entwicklung eines Impfstoffes aus Einzelern gegen Grippe - ein möglicher Paradigmenwechsel bei Impfstoffen gegen Viren</i>                         |
| <b>18 July 2016</b>     | Prof. Dr. Gerold Alsmeyer (Institut für Mathematische Statistik, WWU-Münster): <i>Zu Fällen des Zufalls aus Sicht der Mathematik. Ein vergnüglicher Streifzug</i>                               |
| <b>17 October 2016</b>  | Prof. Dr. Stefan Heusler (Institut für Didaktik der Physik, WWU Münster) & Dipl.-Des. Michael Tewiele : <i>Visualisierung des Unsichtbaren - Von Quantenschwingungen bis zum Periodensystem</i> |
| <b>21 November 2016</b> | Prof. Dr. Peter Hammerstein (Institut für Theoretische Biologie, Humboldt-Universität Berlin): <i>Evolution der Kooperation</i>   |



## Upcoming events



**Wednesdays,**  
9.00 — 10.15

Lecture series "Evolution across fields"

**6 May 2016**

PhD Defense Patricia Kearney  
(14.15, Seminar room 242, Geo 1, Heisenbergstr. 2)

**MÜNSTER**  
**GRADUATE**  
**SCHOOL OF**  
**EVOLUTION**

Up-to-date information can also be found on: [www.wwu.de/Evolution/mgse/](http://www.wwu.de/Evolution/mgse/)