

BIG4: Biosystematics, informatics and genomics of the big 4 insect groups- training tomorrow's researchers and entrepreneurs

Kick-Off Meeting

14-18 September 2015

Copenhagen, Denmark



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 642241

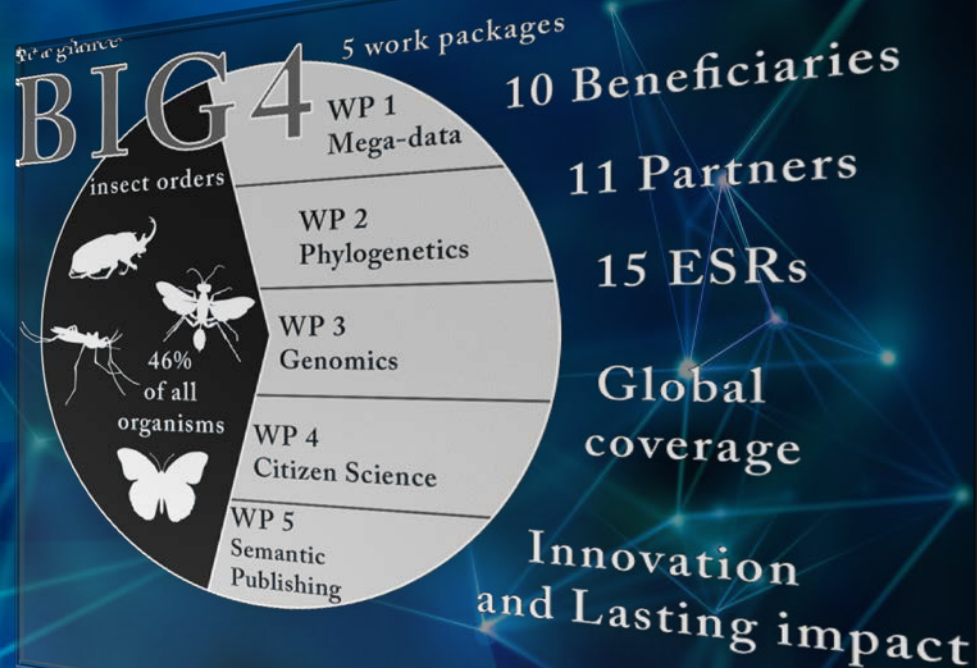
BIG4: TRAINING

INSECT SYSTEMATISTS (SENSU LATISSIMO!) OF THE FUTURE

Alexey Solodovnikov

Biosystematics Section
Natural History Museum
of Denmark, Copenhagen

Curator of the Beetle
(Coleoptera) collection

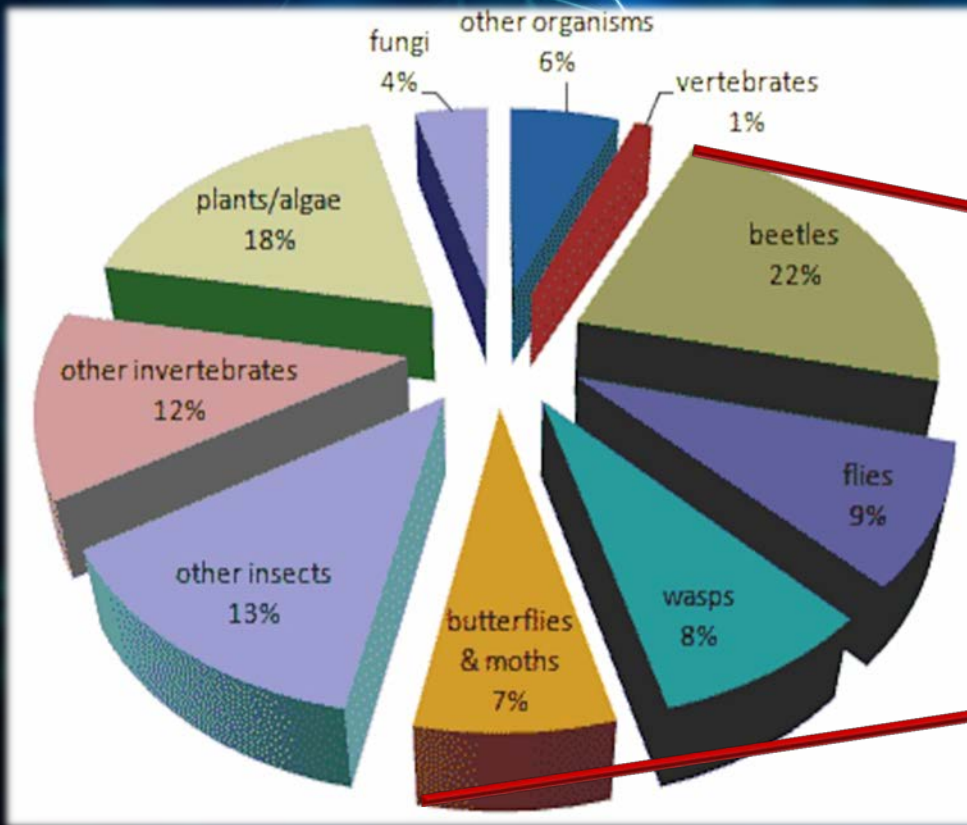


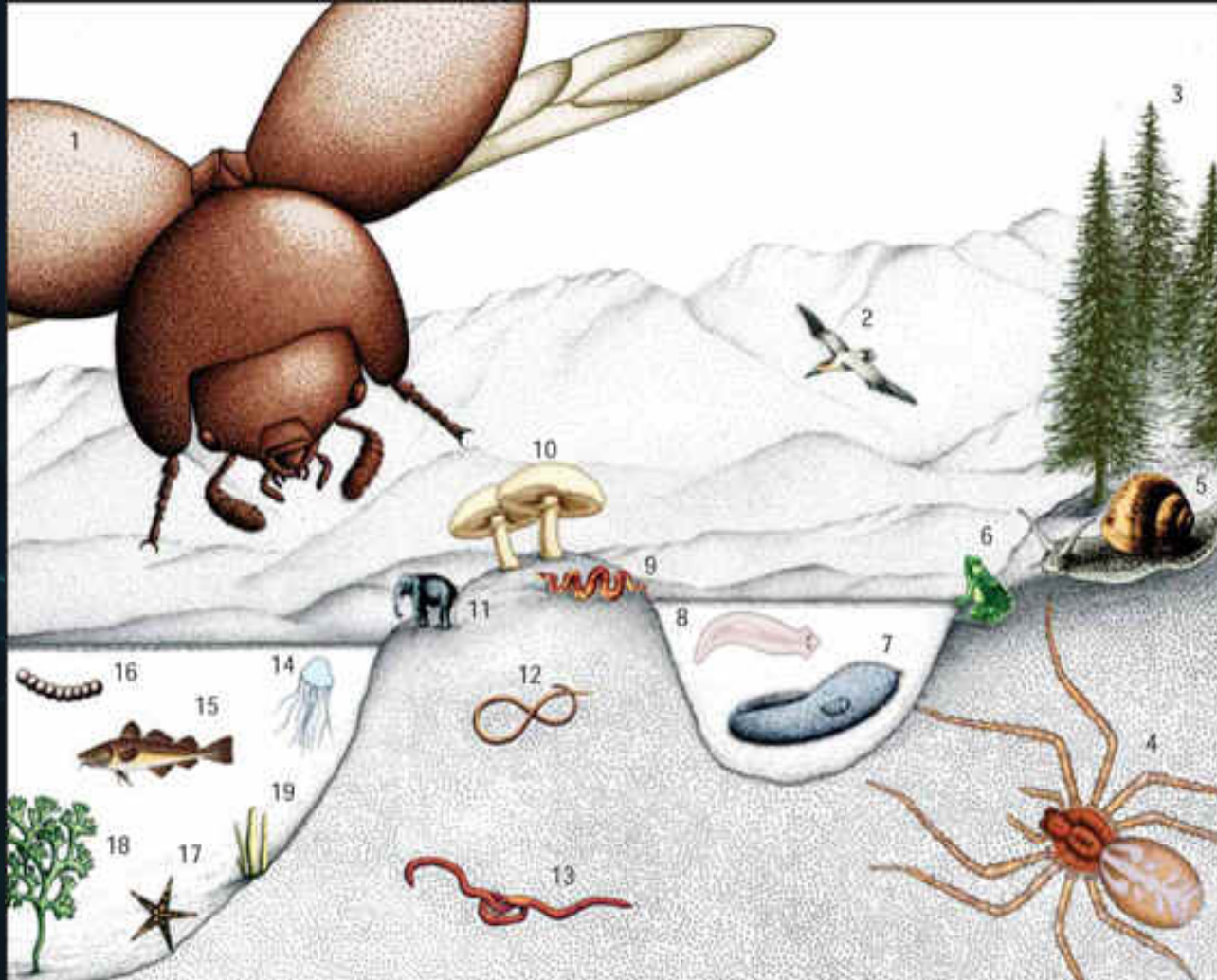
asolodovnikov@snm.ku.dk



INSECTS – dominating form of life

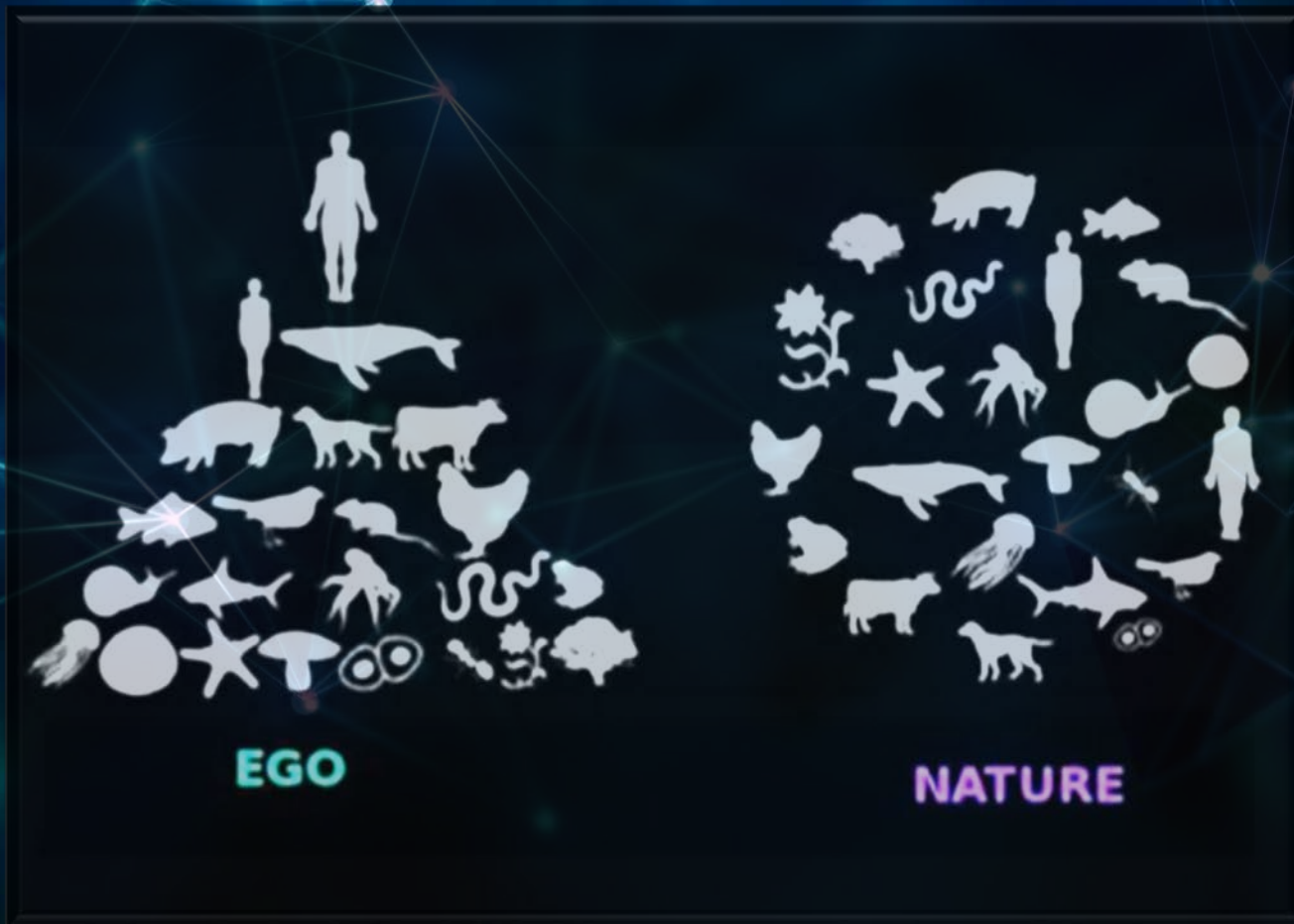
RELATIVE NUMBERS OF NAMED SPECIES





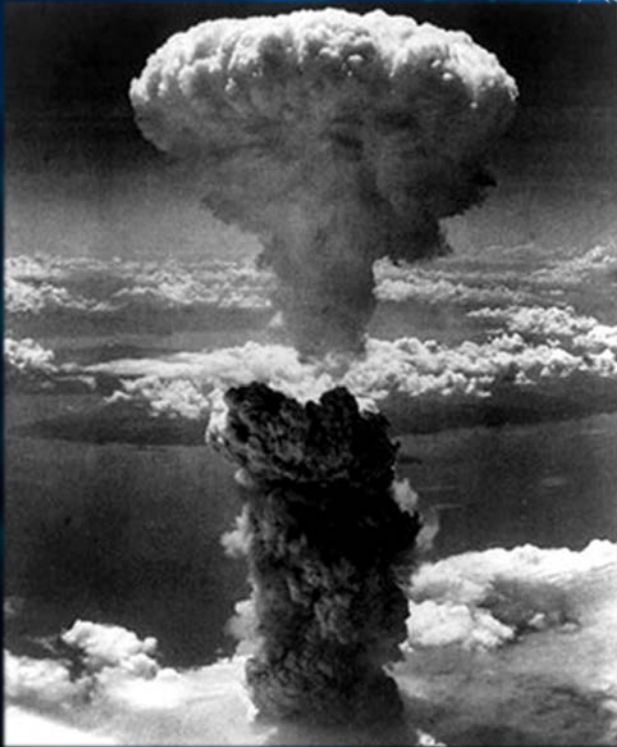


Antropocentrism





Antropocentrism





Antropocentrism in science

Bias towards vertebrates, mammals,
cool creatures, biomedicine...

WE ARE HERE TO MAKE A DIFFERENCE!

Limited and skewed basic biological knowledge



Systematics (of BIG4) as a focal point

Collecting/observing insects or their traits means **IDENTIFICATION**



Identification means **CLASSIFYING**



Classifying means building **TREE OF LIFE**



Building Tree of Life means leading **COMPARATIVE BIOLOGY**

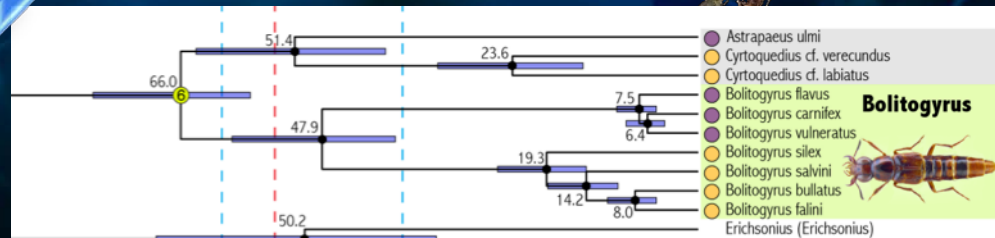
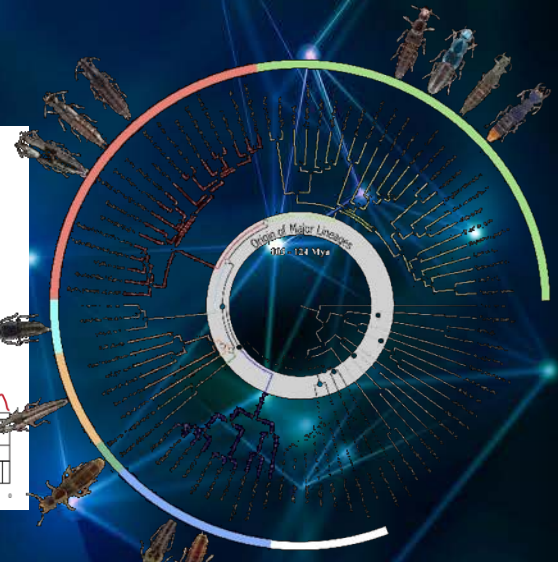
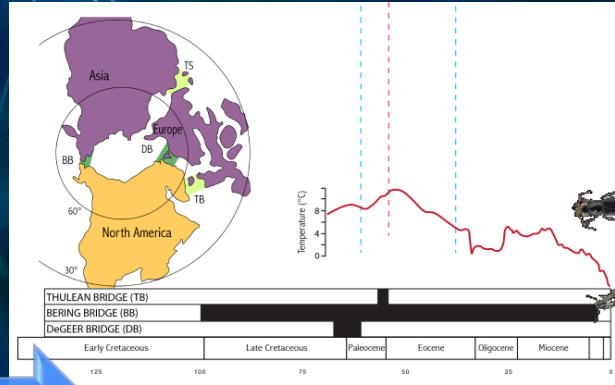
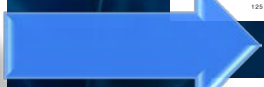
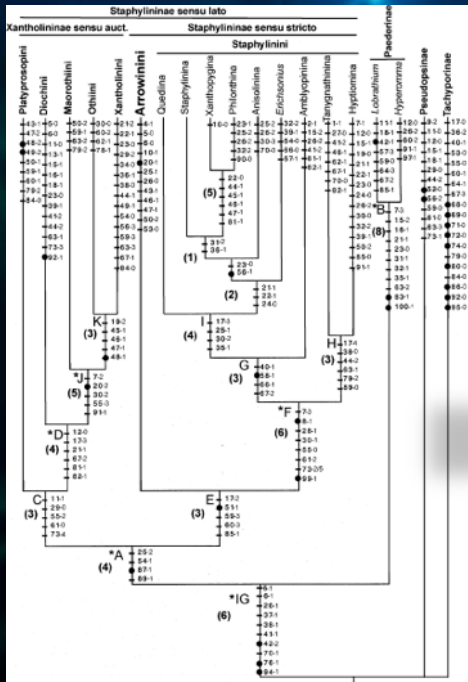


Leading complex science assumes front end means for
DATA COLLECTION, INTEGRATION, COMMUNICATION



Idea and motivation

Breaking growing gaps via cross-disciplinary PhD training



My PhD thesis

My PhD student's thesis



RESEARCH & INNOVATION

Marie Skłodowska-Curie actions



MARIE CURIE ACTIONS

European Commission > Research & Innovation > Marie Skłodowska-Curie Actions > ... > Actions > Innovative Training Networks

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Innovative Training Networks (ITN)

Are you looking for high quality doctoral-level training in and outside academia?

Innovative training networks bring together universities, research centres and companies from different countries worldwide to train a new generation of researchers.

The funding boosts scientific excellence and business innovation, and enhances researchers' career prospects through developing their skills in entrepreneurship, creativity and innovation.

Types of Innovative Training Networks

ITN project proposals may take one of three forms:

European Training Networks (ETN)

Joint research training, implemented by at least three partners from in and outside academia.

The aim is for the researcher to experience different sectors and develop their transferable skills by working on joint research projects.

The organisations should be established in at least three different [EU or associated countries](#).

Additional participants from any organisation anywhere in the world can also join a network.

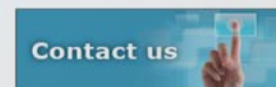
European Industrial Doctorates (EID)

Joint doctoral training delivered by at least one academic partner entitled to award doctoral degrees, and at least one partner from outside academia, primarily enterprise. Each participating researcher is enrolled in a doctoral programme and is jointly supervised by supervisors from the academic and non-academic sector, where they spend at least 50% of their time.

The aim is for the doctoral candidates to develop skills inside and outside academia that respond to public and private sector needs.

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Open calls

[H2020-MSCA-IF-2015](#)
Deadline:10/09/2015

[H2020-MSCA-COFUND-2015](#)
Deadline:01/10/2015

[See all open calls](#)



Biosystematics, Informatics, Genomics

BIOSYSTEMATICS, INFORMATICS, AND GENOMICS OF THE 4 BIG INSECT GROUPS



European Union-funded 4 years (2015-2018) consortium to train 15 ESRs (students) in systematic entomology:

10 core organizations in Europe
11 support labs globally
ca.4 million Euro budget



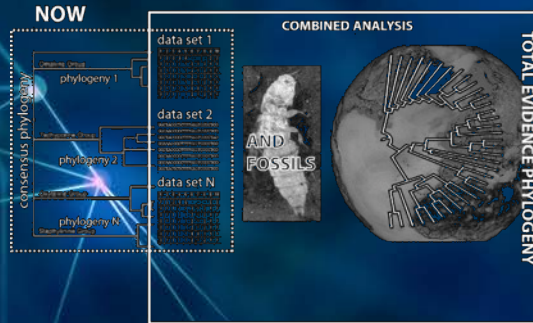
This project has received funding from the European Union's Marie Skłodowska-Curie Innovative Training Network Program.
Project No 642241





BIG4 = 15 PROJECTS, EACH WITH ELEMENTS OF:

Revisionary systematics.
Morphology.
Data sets compatibility.



Genomics
and ancient DNA
(museum specimens).



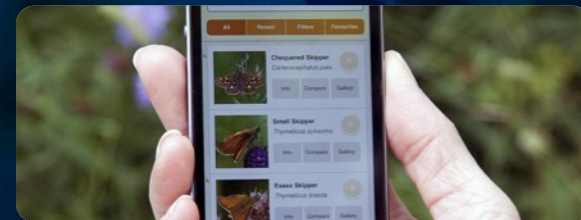
Statistical
phylogenetic analysis.

$$P(c|x) = \frac{P(x|c)P(c)}{P(x)}$$

Likelihood: $P(x|c)$
Class Prior Probability: $P(c)$
Posterior Probability: $P(c|x)$
Predictor Prior Probability: $P(x)$

$$P(c|X) = P(x_1|c) \times P(x_2|c) \times \dots \times P(x_n|c) \times P(c)$$

Citizen-science and informatics
for biodiversity.



Semantic publishing, and outreach.

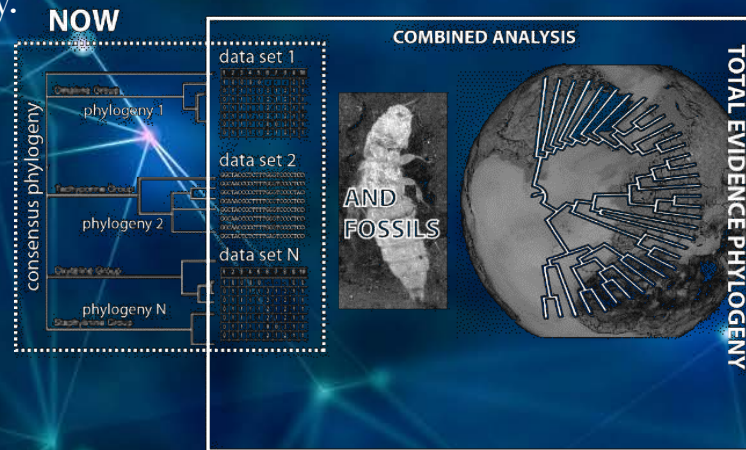


PROJECTS: TAXON-BASED AND CROSS-TAXONOMIC

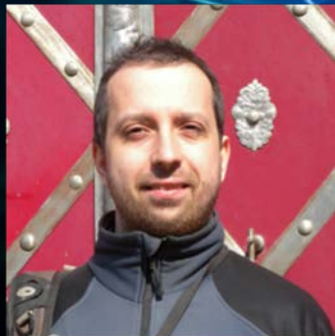


Biosystematics, Informatics, Genomics

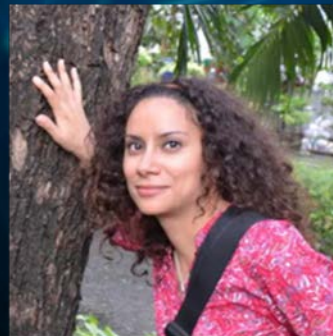
Revisionary systematics.
Morphology.
Data sets compatibility.



Rolf Beutel



Martin Fikacek



Nesrine Akkari



Ximo Mengual



Genomics and ancient DNA
(museum specimens)



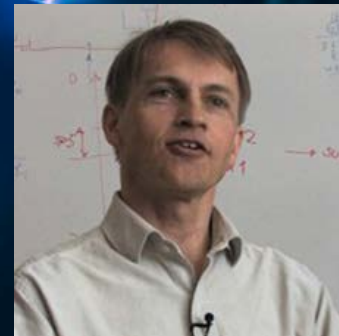
Statistical
phylogenetic analysis



Niklas Wahlberg



Eduardo Pareja



Fredrik Ronquist



Biosystematics Informatics Genomics

Citizen-science and informatics for biodiversity

Semantic publishing,
and outreach



Lyubomir Penev

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RESEARCH KNOWLEDGE FOR BUSINESS SOLUTIONS EN SE

We are at the forefront of research

We keep ourselves updated on the latest research findings in the areas we work with. This is to overcome the gap between academia and industry.

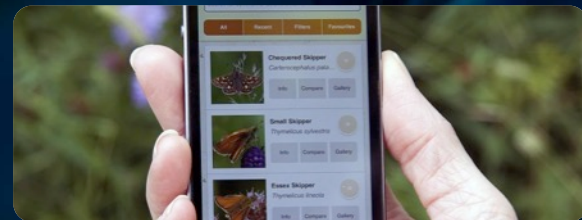
[MORE INFO >>](#)

LATEST NEWS

- NY MEDARBETARE**
Vi välkomnar Caterina Melchiorre som började på Savantic den 1 februari.
- NEW EMPLOYEE**
We welcome Tobias Carlsson, who started at Savantic the 1st of June. Tobias has a degree in theoretical physics and a PhD in physical chemistry from 2012.
- NEW EMPLOYEE**
We want to welcome Jonas Nilsson, PhD in materials physics. Jonas got his PhD in Cambridge England for the French University Université Blaise Pascal.

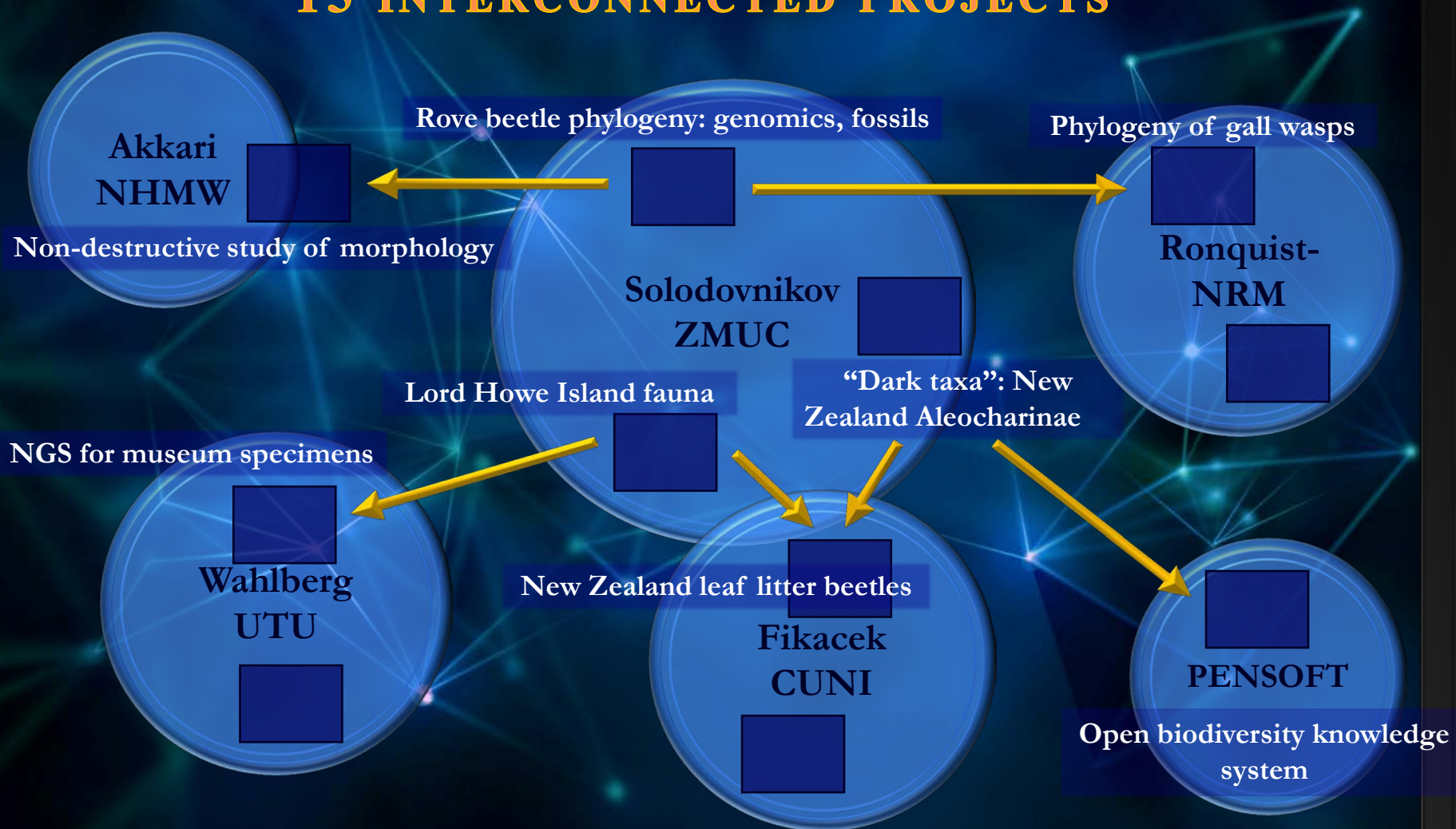
LAST BLOG POSTS

- Depth sensors**
04/08/2014
As the technology for depth measurements has been improved, there has been an explosion in the market for depth sensors in the last few years. Depth sensors are already used in for example robotics, games like the Xbox Kinect, depth measurements... [More >](#)
- Pär Holmgren visit**
27/05/2014
Pär Holmgren, former meteorologist on SVT and since 2009 working full-time on the sustainability issue, recently came to visit us at Savantic. For nearly two and a half hours we had the privilege to discuss and ask him questions about... [More >](#)
- Augmented Reality (AR) Letter**
18/12/2013
Many of the Savantic research days in the past year have been related to Augmented reality (AR). We have looked at various techniques in the field as well as some software and software libraries, focusing on AR via





15 INTERCONNECTED PROJECTS







ACADEMIA VS. INDUSTRY





Biosystematics Informatics Genomics

PARTNERS





BIOsystematics INformatics GENomics
**GUESTS AND
COLLABORATORS**



Dagmara Źyła



Aslak Hansen, Line Kræmer, Mathias Justesen



Mariana Chani-Posse

Incoming
students



Jacek Szwedo

WEBSITE AND COMMUNICATION

<http://big4-project.eu>

BIG4
Biosystematics, Informatics, Genomics

Biosystematics, informatics and genomics of the big 4 insect groups: training tomorrow's researchers and entrepreneurs

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HIGHLIGHTS

Training events

One of the special features of BIG4, as an EU funded Innovative Training Network, is regular joint workshops for all students that cover various aspects of modern entomological systematics, such as: growth and maintenance of the entomological collections including specimens adequately preserved for ...

[Read more](#)

TWEETS

BIG4 Project @BIG4_Project 10 Sep
UPCOMING EVENT : BIG4 Kick-off in Copenhagen, DENMARK (UPDATES!) ift.tt/1Hbndrv EVENT : BIG4 Kick-off in Copenhagen, DENMARK (UPD...
[Expand](#)

BIG4 Project @BIG4_Project 23 Jun
UPCOMING EVENT: BIG4 Kick-off in Copenhagen, DENMARK ift.tt/1Hbndrv EVENT: BIG4 Kick-off in Copenhagen, DENMARK #MSCA

[f](#) [t](#) [in](#) [g+](#)

CALENDAR

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What is RSS?

NEWS



ADMINISTRATIVE SUPPORT

Welcome to the EU Office
at the University of Copenhagen

KØBENHAVNS
UNIVERSITET



Katrina Vendelboe



Sree Selvantharan





WHO IS THE MOST IMPORTANT?

YOU,
EARLY STAGE RESEARCHERS!



AND INSECTS!





GOOD LUCK!





PLAN OF THE MEETING

MONDAY

10.30-11.00 : Welcome and introduction
11.00-12.20 : EU office talk
12.30-13.30 : Lunch
13.30-18.00 : Supervisor's talks
18.30 : Common dinner

TUESDAY

8.00-9.00 : Common breakfast
9.00-12.20 : PhD projects
12.30-13.30 : Lunch
13.30-15.00 : PhD projects
15.00-17.00 : Business meeting
18.30 : Dinner club

WEDNESDAY

9.00-17.00 : Excursion to Røsnæs

THURSDAY

9.00-10.30 : Entomological collection at ZMUC
10.30-10.45 : Tea/coffee break
10.45-12.15 : Entomological collections - talks
12.30-13.20 : Lunch
13.30-14.30 : Guided tour of exhibition
14.30-16.30 : Entomological collections - talks (with coffee break)
16.30-17.00 : Free discussion

FRIDAY

9.00-12.30 : Practical collections-based work (with coffee break)
12.30-13.20 : Lunch
13.30-14.00 : Data management (GBIF) talk
15.00-16.00 : Copenhagen Canal tour