

2 ANNOUNCEMENTS OF THE JENA GROUP





SEARCHING THE

PHILOSOPHER'S STONE



HACKEN



THE BIOINF FESTIVAL

03.04. – 09.04.

STAY YOUNG OR DIE TRYING

WWW.RNA.UNI-JENA.DE/HACKEN

HEALTHY AGING & NEURODEGENERATIVE DISEASES



marker genes for aging?

many marker genes found

but:

- specific organism
- specific tissue
- juvenile vs. very old



- Alzheimer's disease
- Parkinson's disease
- Huntington's disease
- Amyotrophic lateral sclerosis (ALS)

launched 10/2009

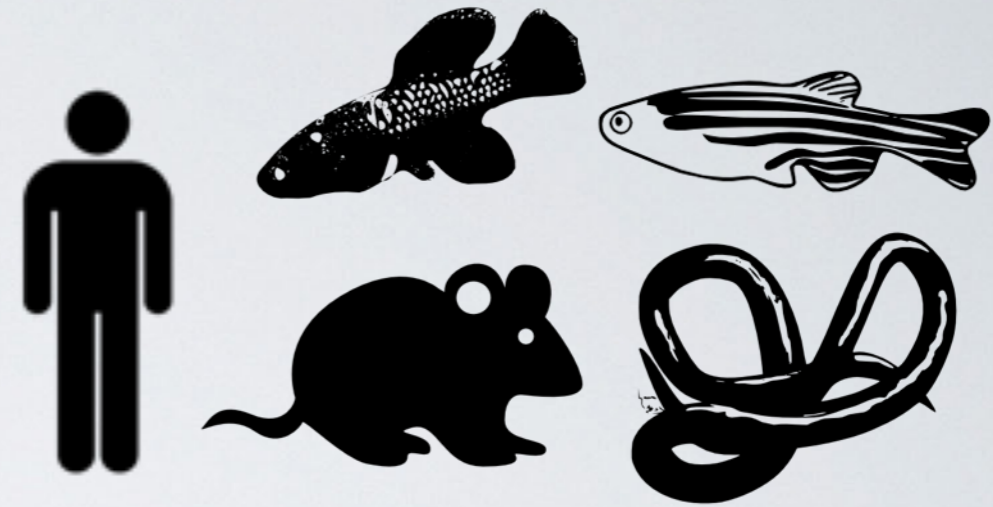
JENIΔGE

JENA CENTRE FOR
SYSTEMS BIOLOGY OF AGEING

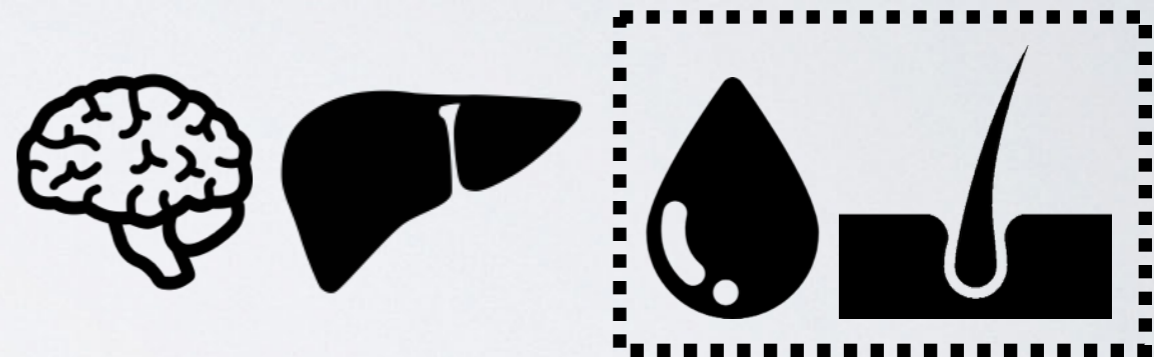
- 10 Jena-based research groups
- 4 institutes (FLI, HKI, FSU, UKJ)

JENAGE DATA

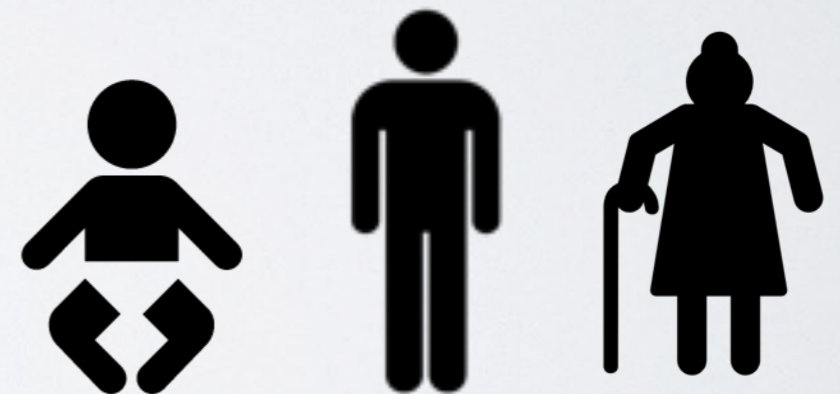
- 5 organisms:
- human, mouse, killifish, zebrafish and roundworm



- 4 tissues:
- brain, liver, blood, skin



- 5 timepoints
- juvenile, young adult, adult, old, very old



- 2 different stress conditions
- sport, no sport

JENAGE DATA

For each of these data sets we have:

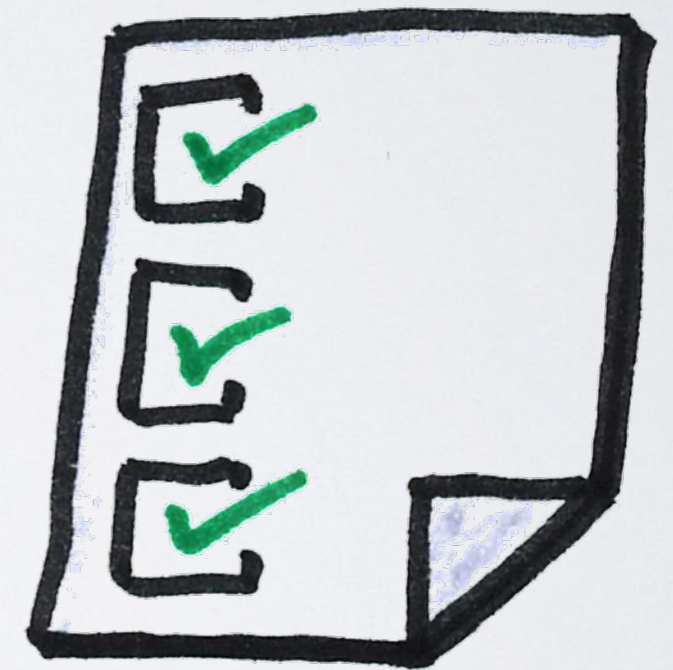
- 6-12 replicates
- polyA data (lncRNAs detectable)
- miRNA data (for nearly all data sets)

HOW TO ANALYSE THE DATA?

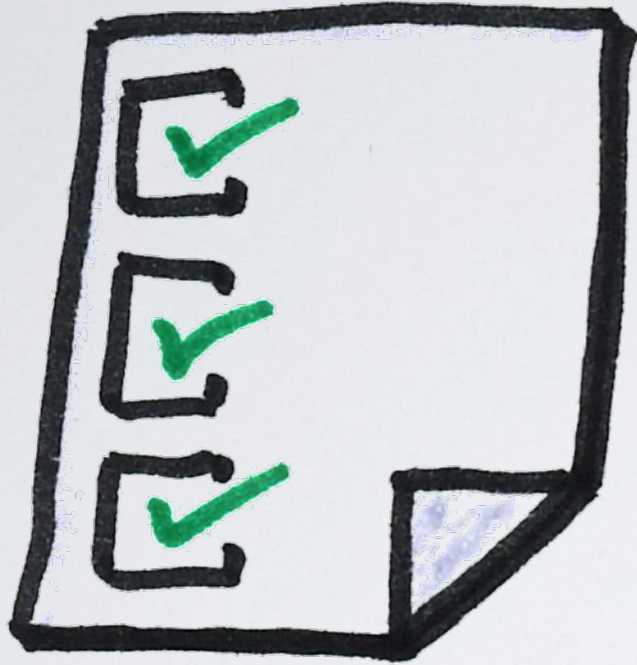
SYSTEMATIC APPROACH: MARKER GENES

- Inflammaging
- Autophagy
- Mitochondrial aging
- Stem cells with age
- Senescence
- DNA damage response
- Cell cycle regulation
- Cell turn over

list of marker genes for each area



SYSTEMATIC APPROACH: MARKER GENES



- specific organism
- specific tissue
- juvenile vs. very old

Are those marker genes marker genes at all?

Are those marker genes markers for aging in general?

Are they only organism- or tissue-specific?

METHODS

Beforehand:

- Genome and annotation files
- Mappings (splice-aware and multi-mapped; different tools)
- Quantifications (unique and multiple read counts)

During HACKEN:

- differential gene expression
- alternative splicing
- pathway enrichment
- single nucleotide variants
- co-regulation of genes



SPECIFIC QUESTIONS TO LOOK AT

- Susceptibility of organs to aging?
- When and where does aging start?
- Does an enriched environment reverse aging?
- Is mice skin a good model for human skin aging?
- ...



Your chance at

 **HACKEN** 
2017

Raise your own questions!

Test your own methods!

WHAT ELSE IS AWAITING YOU?

- Drinks and Snacks
- Hack-Bufferet (sorry to the vegetarians and pregnant women)
- Jimmy Joy
- Table football
- Pubs and clubs of Jena
- Game Night
- Print your own festival Shirt (or Bag,...)





HACKEN

THE BIOINF FESTIVAL

03.04. – 09.04.

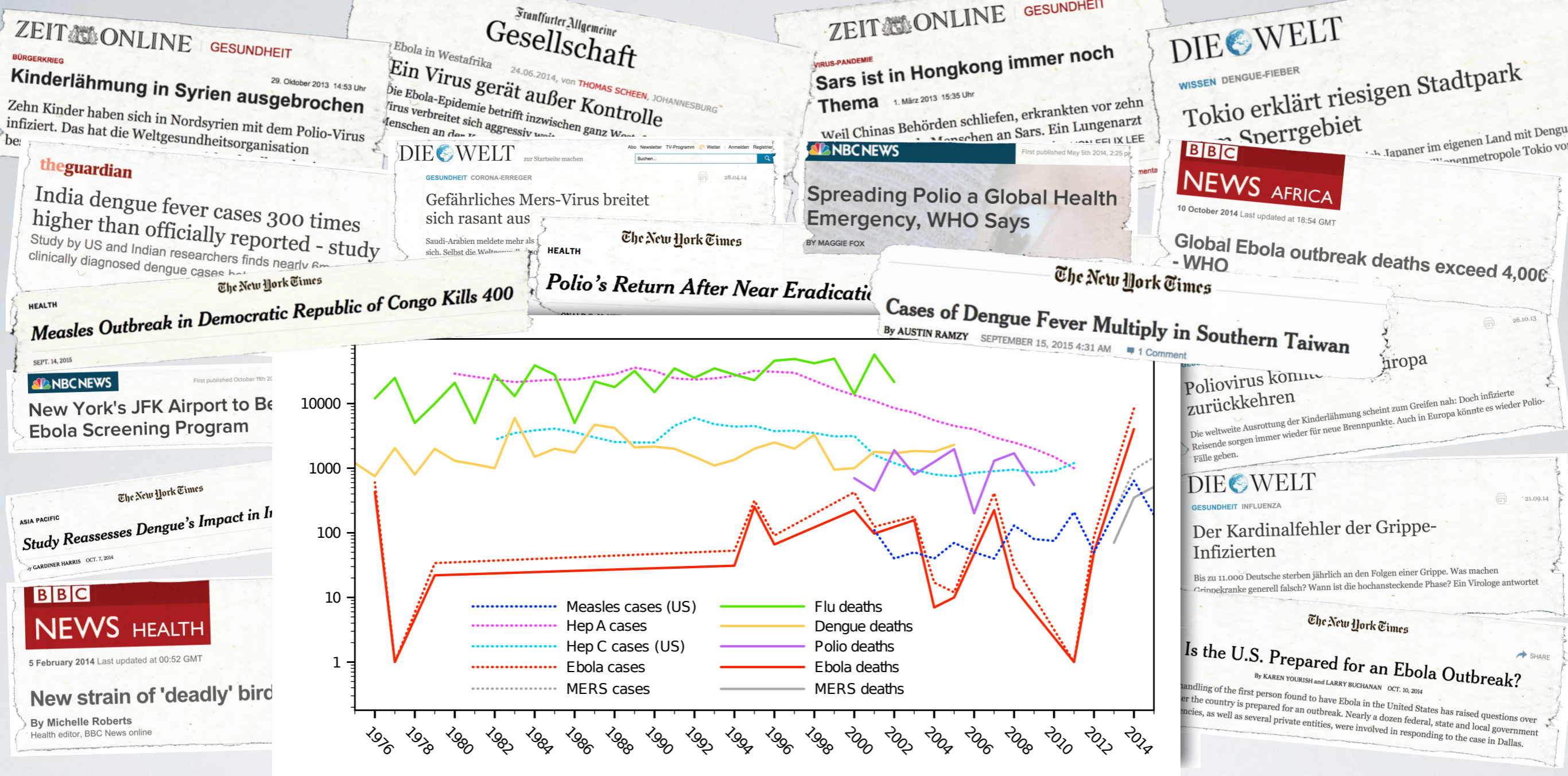
STAY YOUNG OR DIE TRYING

WWW.RNA.UNI-JENA.DE/HACKEN

REGISTER NOW!!

`hacken@uni-jena.de`

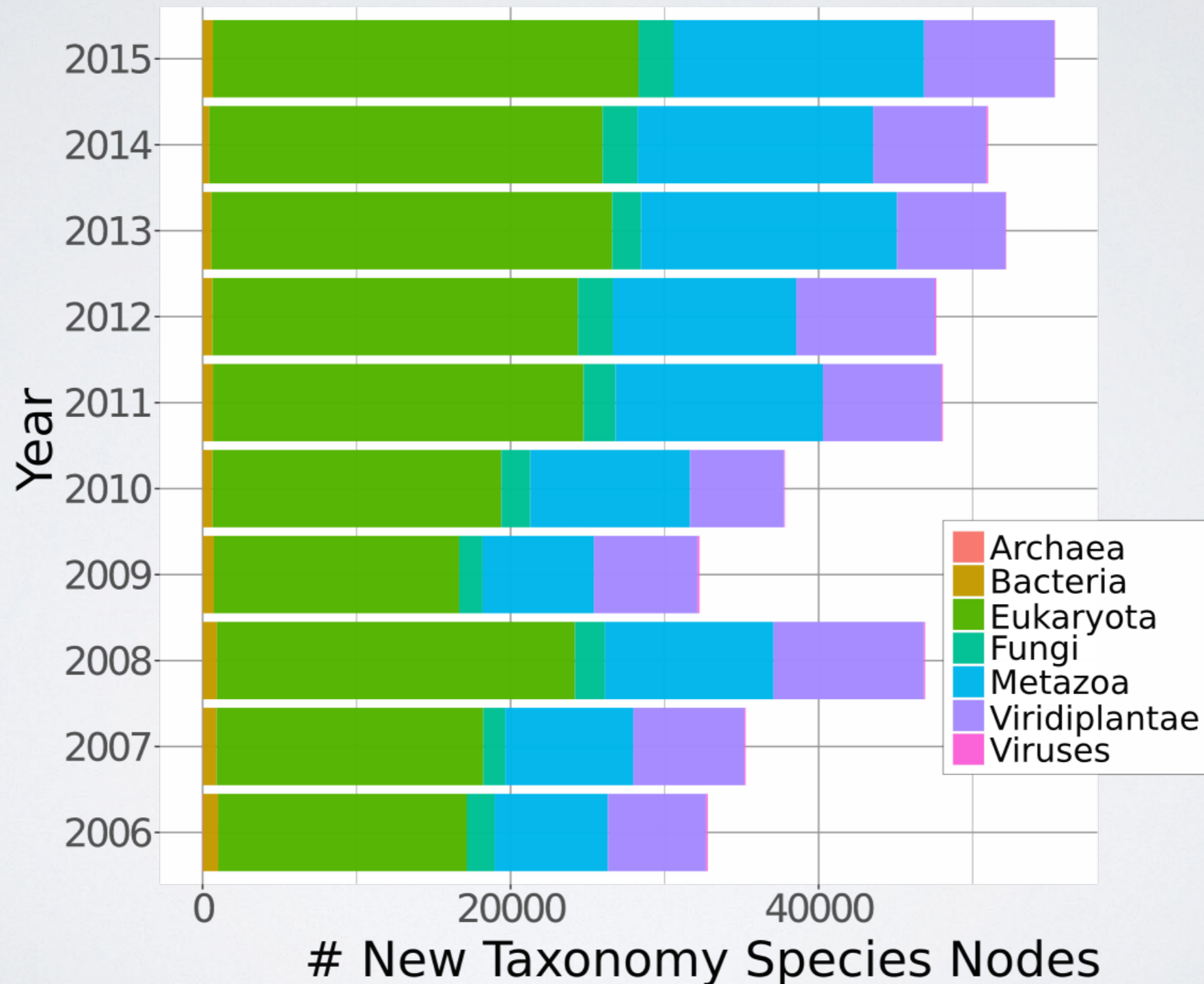
ONLY 53 DAYS LEFT



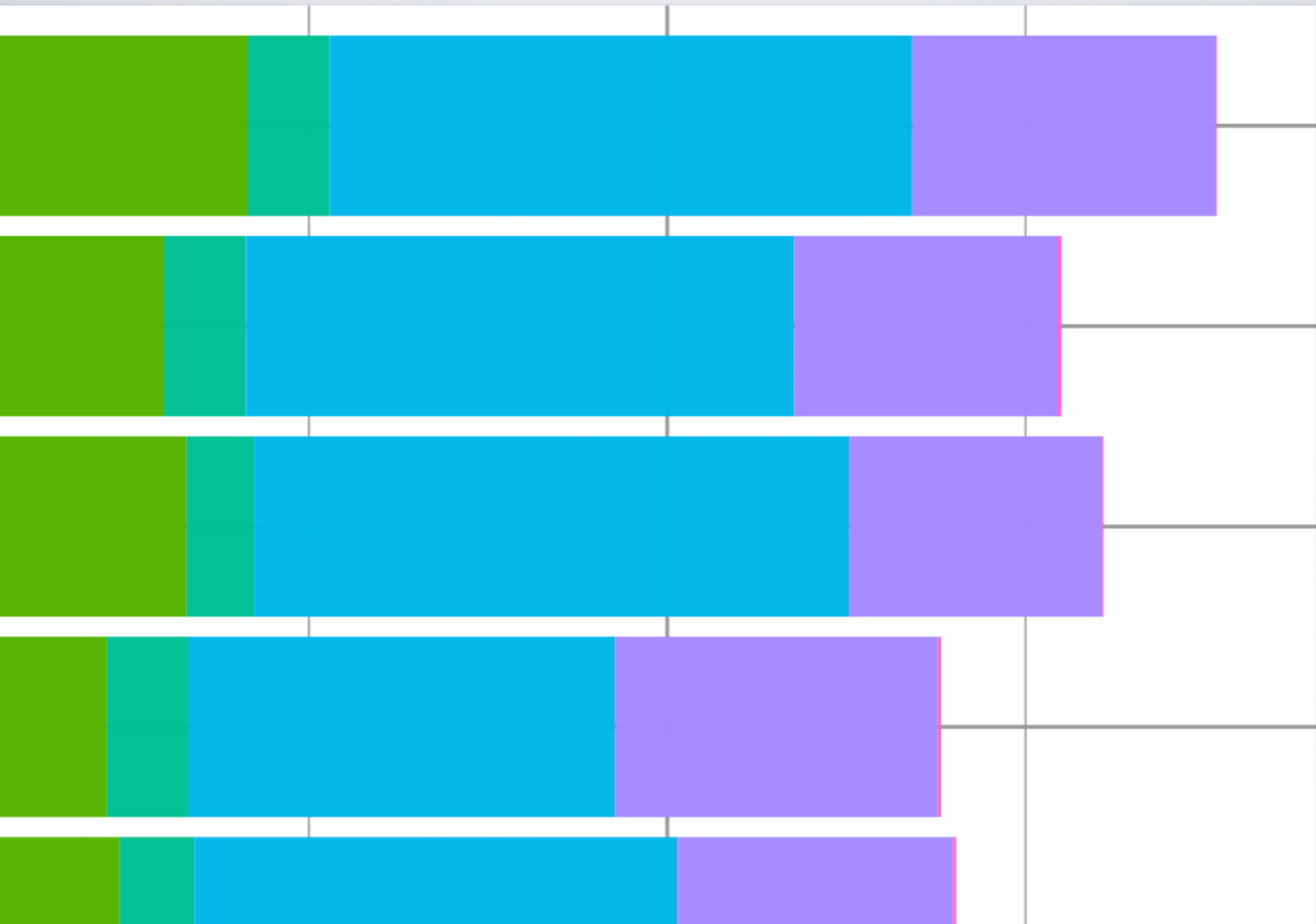
increasingly frequent viral outbreaks
 more uncontrollable pandemics
 > 10% of global deaths attributable to viral infections
 (~60 million people/year)

WHO CARES ABOUT VIRUSES?

Number of newly identified species per year, based on the NCBI Taxonomy Nodes.



WHO CARES ABOUT VIRUSES?



WHAT IS KNOWN SO FAR?

- genetic diversity of viruses is huge
- viruses can vary their genomes quickly
- viruses overcome host defence systems and therapeutic interventions

WHAT IS **NOT** KNOWN SO FAR?

- >99 % of viruses
- fundamental knowledge about new virus families, genera and species
- role of the genetic variability of viruses
- virus evolution rarely studied
- virus-host-interactions rarely studied

WHAT WE DO WE NEED?



European Virus Bioinformatics Center



AIMS OF THE EVBC

- bringing together virologists and bioinformaticians
- exchange of ideas
- interdisciplinary collaborative projects
- local, national and international level
- industrial members and scientists
- increasing international visibility of virus bioinformatics

SCIENTIFIC GOALS

- Virus detection & diagnostics
- Virus phylogeny & taxonomy
- Virus database
- Structure-function relationship
- Virus-host interaction
- Serology & vaccines
- ...



We will found the
European Virus
Bioinformatics Center

1st EVBC Meeting
March 06 – 08, 2017
Join us in Jena



Thomas
Mettenleiter



Stephan
Zientara



Marion
Koopmans



Massimo
Palmarini



Mikail
Gelfand



Guy
Cochrane



Philippe
LeMercier

politicians
EU representatives
BMBF representatives
...

DAY I

Virus Bioinformatics — Key Role in Global Health Research

Workshop with local, national and EU representatives and politicians

- virology state-of-the art and challenges
- virus bioinformatics state-of-the art and challenges
- ongoing projects and funding possibilities

DAY 2

Major Challenges in Virus Bioinformatics

Keynote talks and discussions

- Virus detection & diagnostics
- Phylogeny & taxonomy
- Virus-host-interaction
- Virus replication
- Serology & vaccines



DAY 3

Founding the European Virus Bioinformatics Center

- concluding presentation from the previous days
- founding ceremony



European Virus Bioinformatics Center

WANT TO JOIN?

<http://evbc.uni-jena.de/>

THANKS

ENJOY THE CHILI