Highlights In Big Data From the Bloomberg School of Public Health

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The Institute for Data Intensive Engineering and Science

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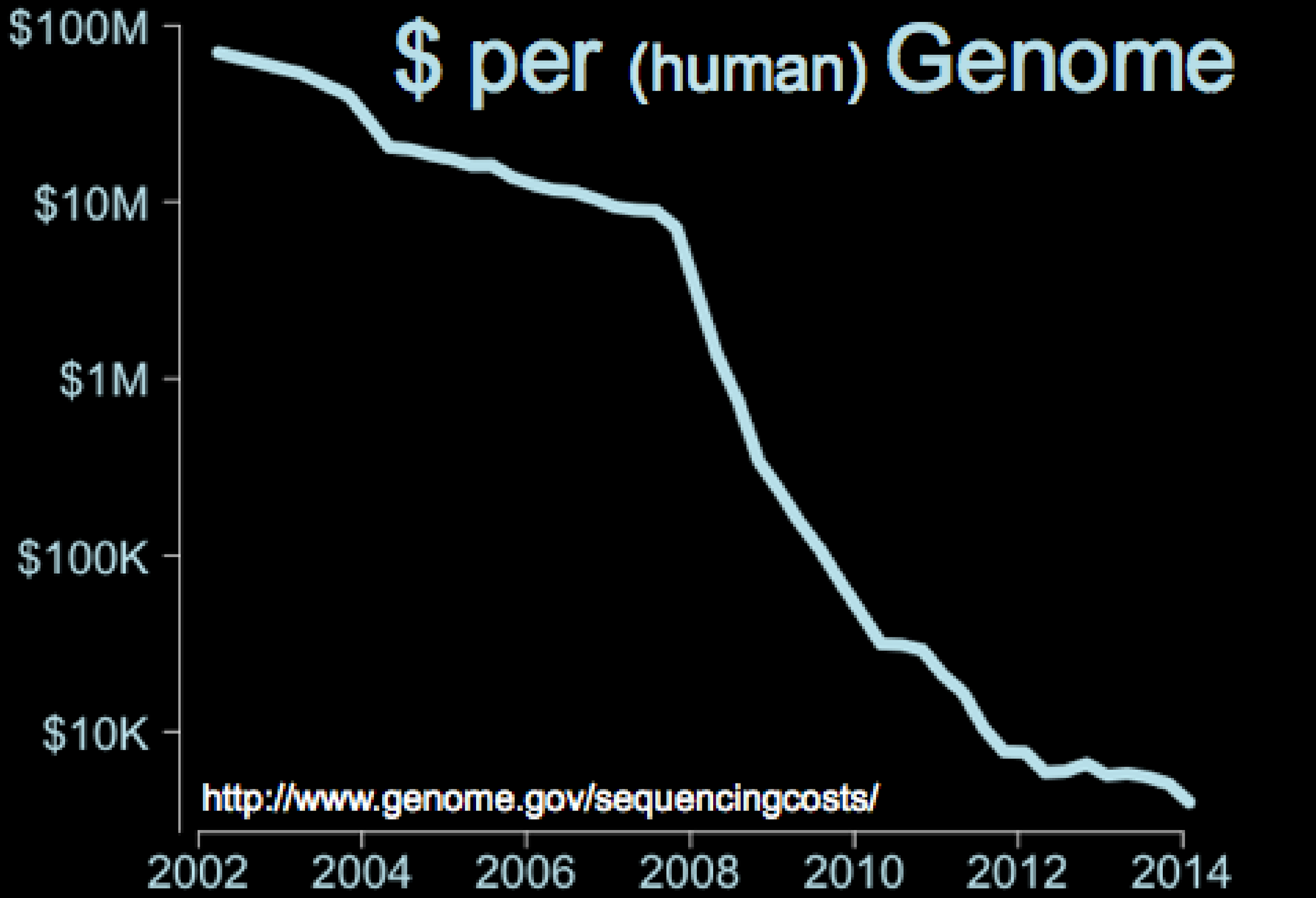
of PUBLIC HEALTH

Protecting Health, Saving Lives —

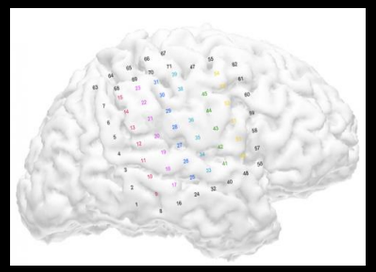
Millions at a Time

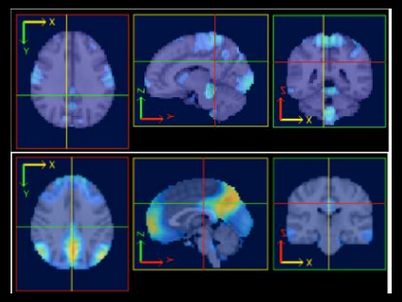
(of data points)

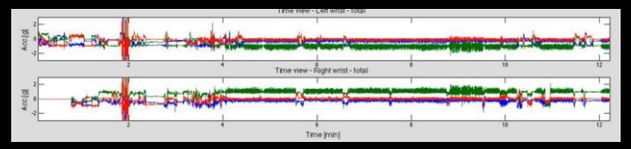
The Measurement Revolution…

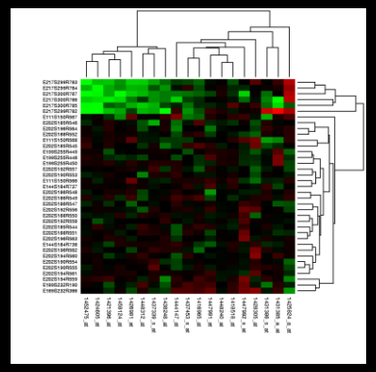


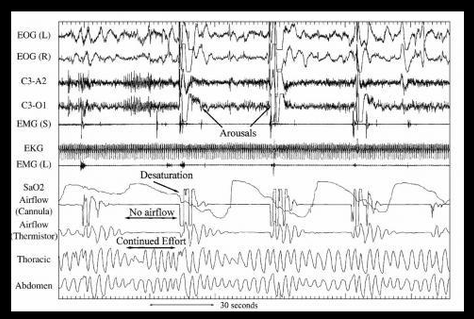
The Measurement Revolution… Multiplied!

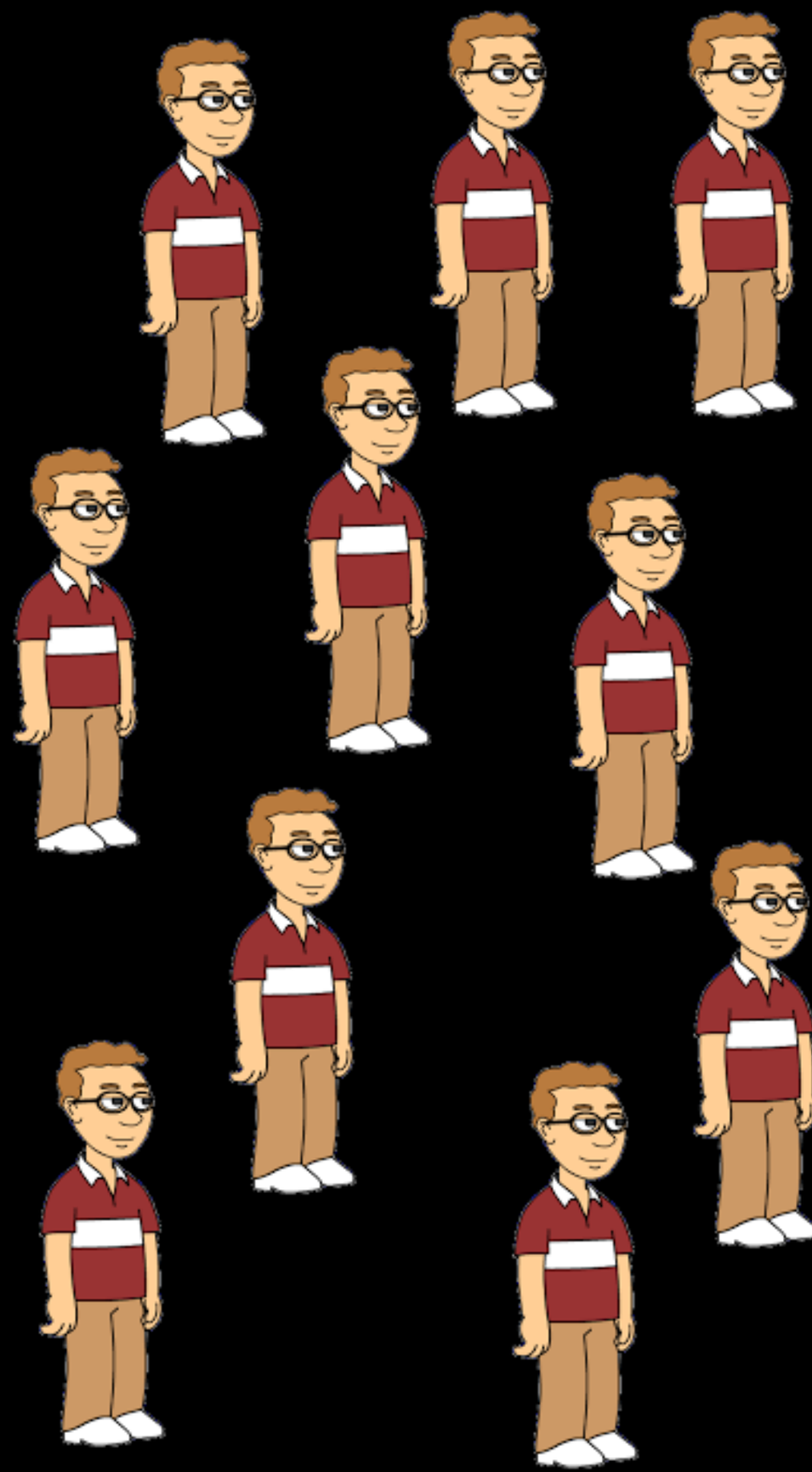












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JOHNS HOPKINS UNIVERSITY
CENTER FOR COMPUTATIONAL BIOLOGY
CCB

McKUSICK-NATHANS Institute of Genetic Medicine

About | People | Publications | Software | Education | Consulting Core

The Center for Computational Biology

A joint research center in the McKusick-Nathans Institute of Genetic Medicine, the Department of Computer Science, and the Department of Biostatistics

The Center for Computational Biology (CCB) is a multidisciplinary center dedicated to research on genomics, genetics, DNA sequencing technology, and computational methods for DNA and RNA sequence analysis. CCB brings together scientists and engineers from many fields, including computer science, biostatistics, genomics, genetics, molecular biology, physics, and mathematics, all of whom share a common interest in gaining a better understanding of how genes and genomes affect biological functions. We develop and apply technology that uses sequence data to study a wide range of questions, including how genes cause disease, how genes change in response to different conditions within the cell, and how genomes evolve.

In addition to its research program, CCB provides bioinformatics expertise to departments and centers throughout the Schools of Medicine and Public Health, through a consulting group trained in the latest computational methods. CCB provides the computing hardware for the analyses run through its consulting group.

More about CCB ...»

News

- **June 24, 2014**. Three CCB faculty - Mihaela Pertea, Art Delcher, and Steven Salzberg - are named 'Highly Cited' by Thomson Reuters. By analyzing the number of *...(read more)*
- **March 20, 2014**. An international team led by David Neale at UC Davis published the genome of the loblolly pine tree, the largest genome sequenced and assembled *...(read more)*
- **March 2014**. Kraken, a new tool developed by Derrick Wood and his advisor Steven Salzberg, is published in *Genome Biology*. Kraken is very fast program for classifying *...(read more)*
- **February 2014**. Ben Langmead is awarded a Sloan Research Fellowship. Since 1955, these fellowships have been given out annually to early-career scientists "whose achievements and potential *...(read more)*
- **February 2014**. Steven Salzberg and Mihaela Pertea published a new method for fast, accurate detection of mutations in exome studies and in comparisons of normal versus diseased *...(read more)*

http://ccb.jhu.edu

Kasper Hansen

Margaret Taub

Jeff Leek

Hongkai Ji

Ingo Ruczinski

Alexis Battle

Cristian Tomasetti

Elana Fertig

Rob Scharpf

Ben Langmead

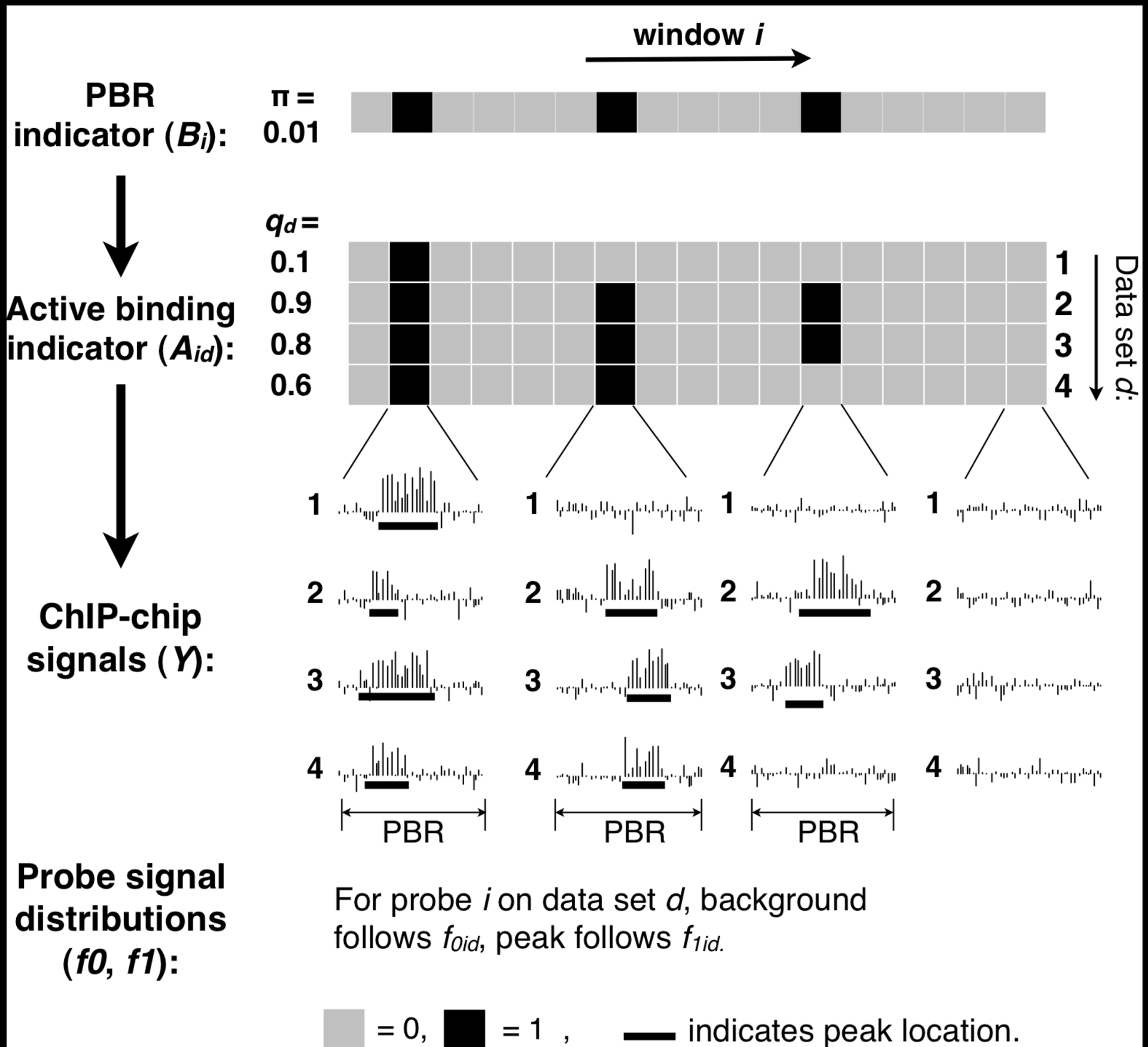
James Taylor

Mihaela Pertea

Lilliana Florea

Steven Salzberg

Multiple ChIP-chip Experiments



SMART
Johns Hopkins University

STATISTICAL
METHODS AND
APPLICATIONS FOR
RESEARCH IN
TECHNOLOGY

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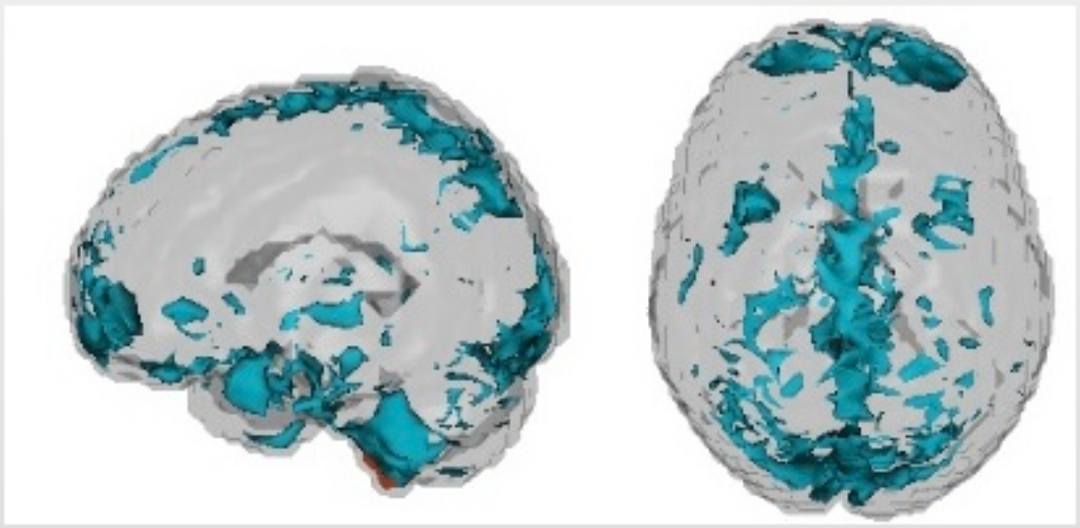


Brain imaging Prediction

An important application of imaging is to try to predict health outcomes using various brain imaging modalities. The SMART group has many parallel efforts in using brain imaging for prediction. This includes efforts to produce better, more biologically motivated predictors as well as efforts in parsimonious prediction based models ... read more

Previous Pause Next

Home

This is the webpage for the Statistical Methods and Applications for Research in Technology (SMART) working group of the Department of Biostatistics in the Bloomberg School of Public Health at Johns Hopkins University. The group was started by Ciprian Crainiceanu and Brian Caffo though it now boasts a core group from around the world

Navigation

- Statistical methods
- Scientific areas of interest
- Software & Tutorials

http://smart-stats.org

Brian Caffo

Ciprian Crainiceanu

Jeff Goldsmith

Sonja Greven

Ani Eloyan

Jaroslaw Harezlak

Martin Lindquist

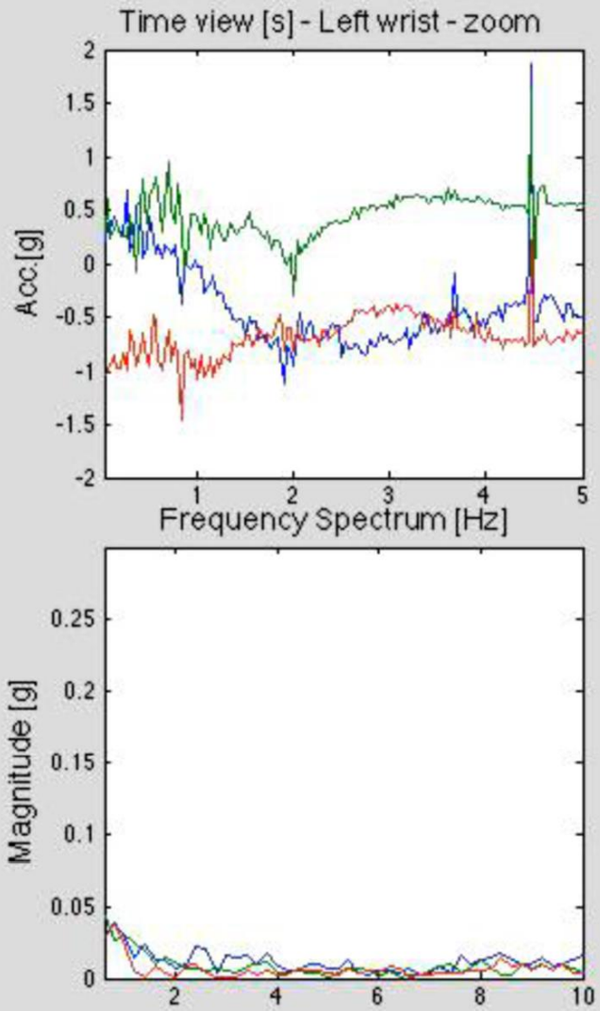
Ana-Maria Staicu

Vadim Zipunnikov

Philip Reiss

Taki Shinohara

What kind of sensors?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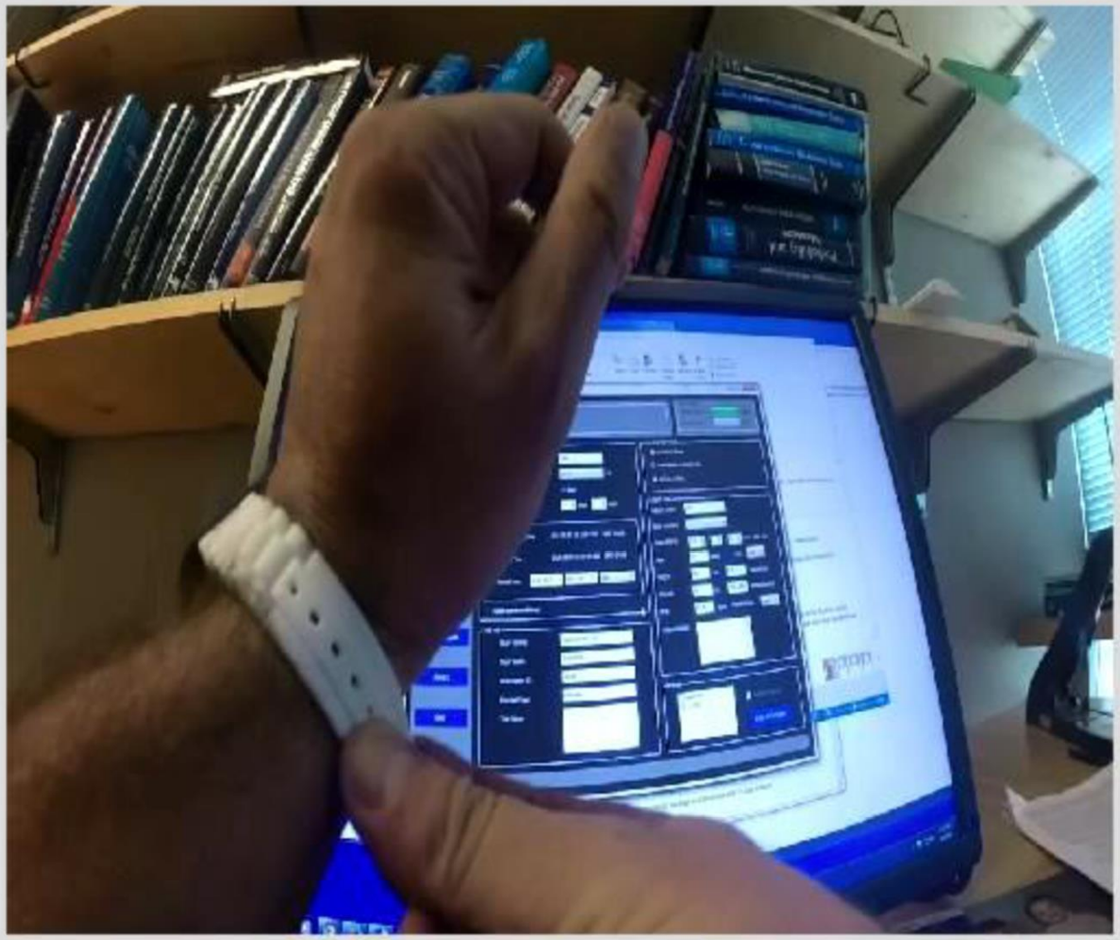
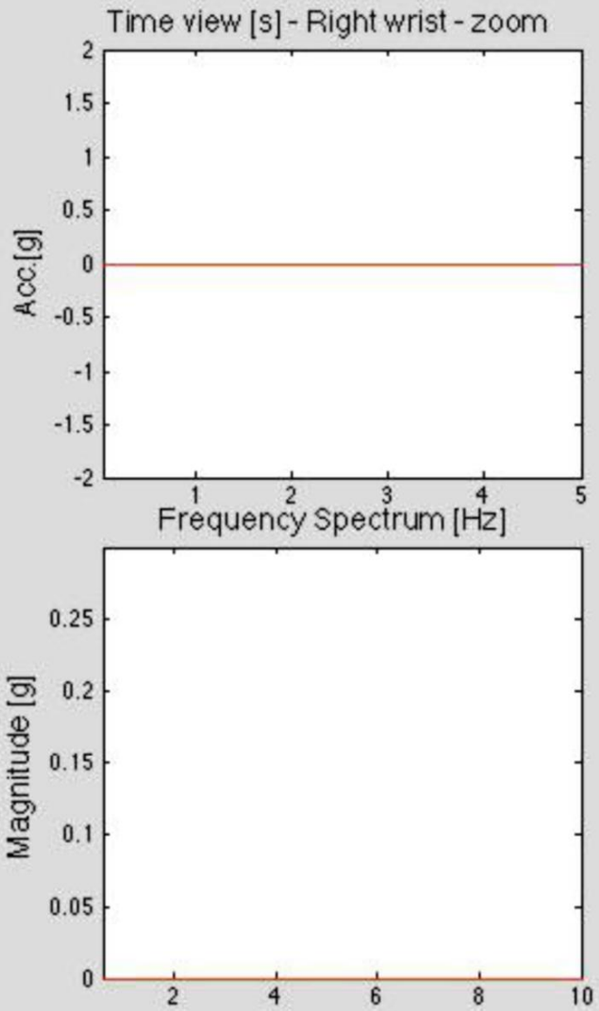
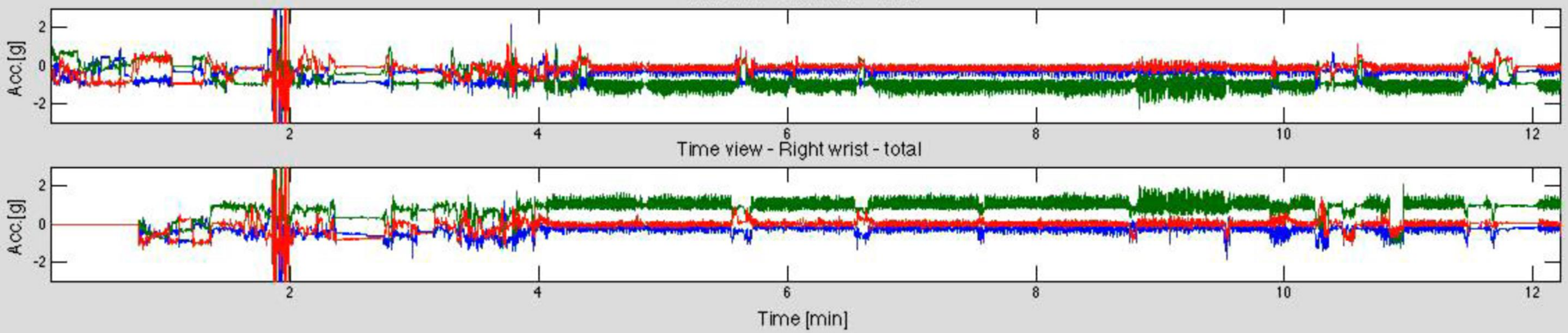
Acc.[g]
Frequency Spectrum [Hz]
Magnitude [g]

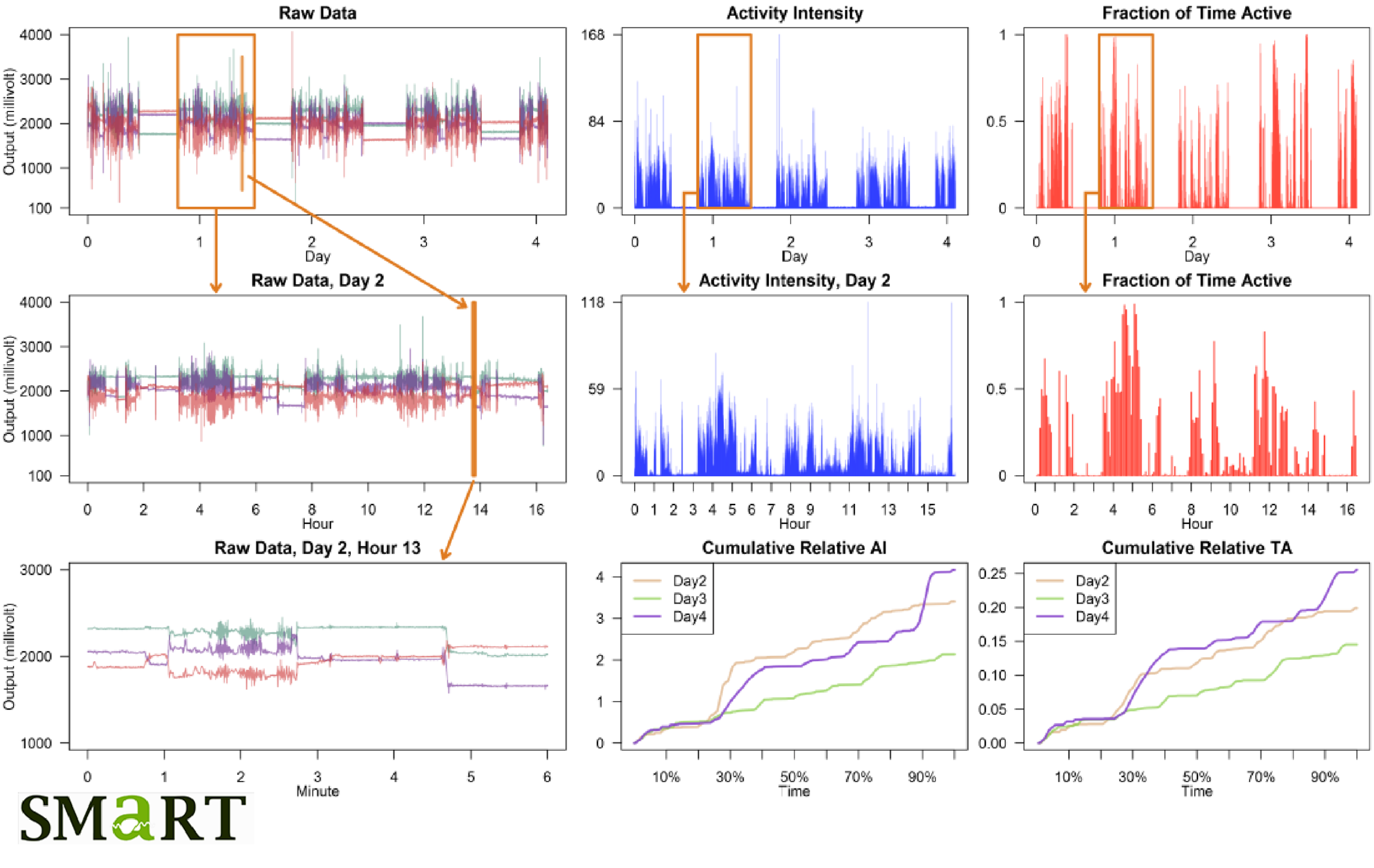

Video


Time view [s] - Right wrist - zoom
Acc.[g]
Frequency Spectrum [Hz]
Magnitude [g]


Time view - Left wrist - total
Acc.[g]
Time view - Right wrist - total
Acc.[g]
Time [min]

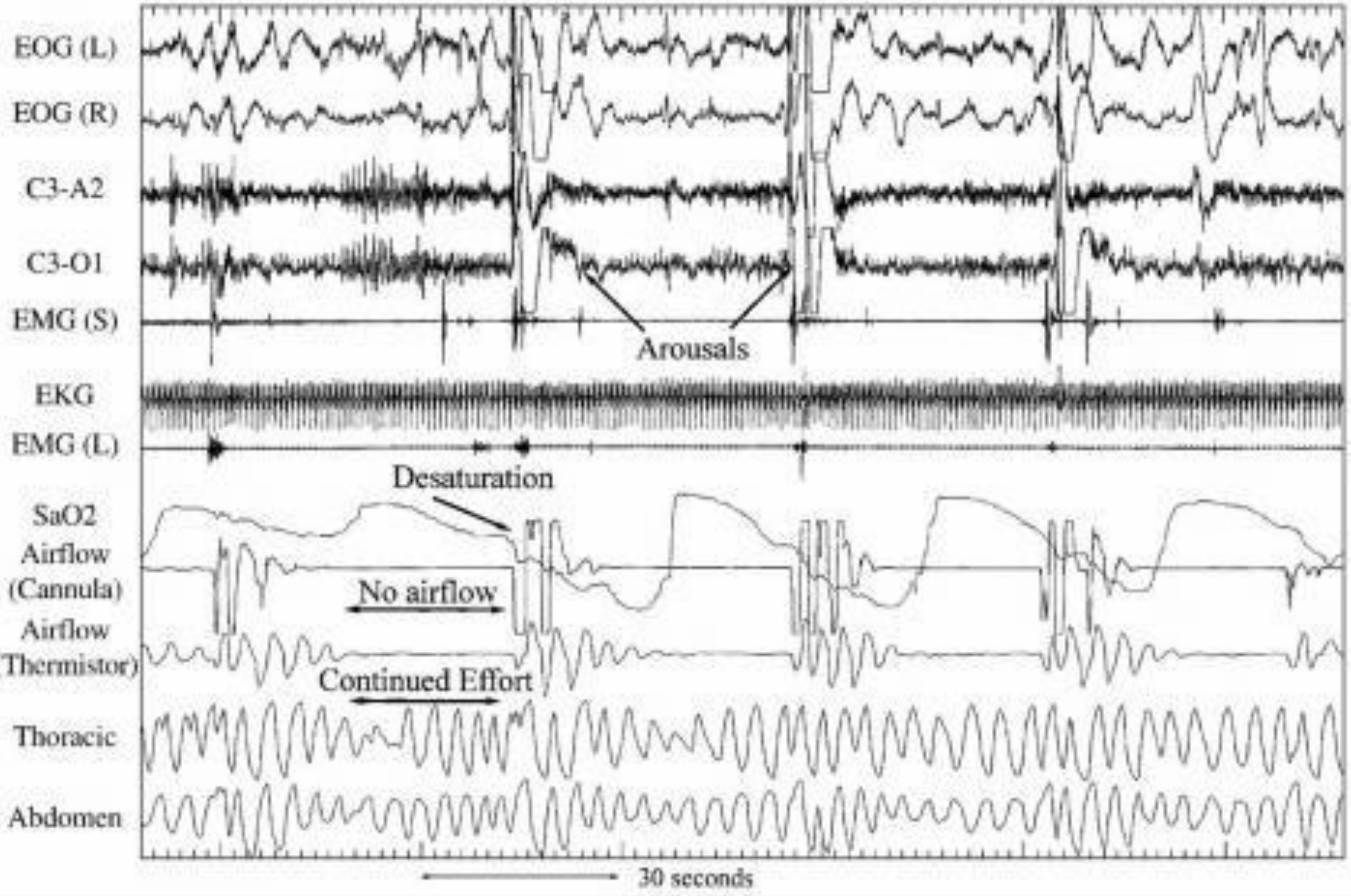
SMART

The many levels of activity data



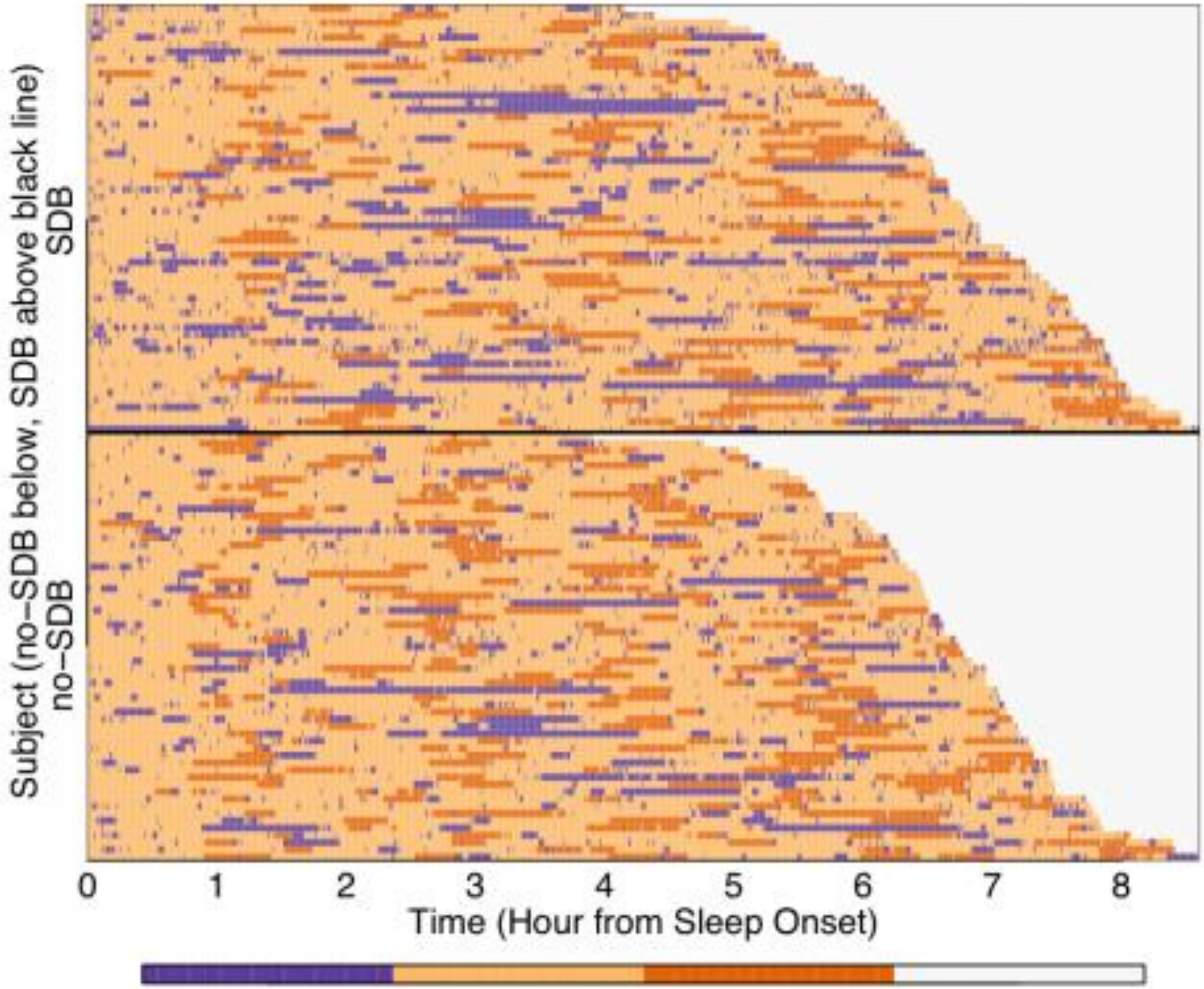
SMART

Sleep


EOG (L)
EOG (R)
C3-A2
C3-O1
EMG (S)
Arousals
EKG
EMG (L)
Desaturation
SaO2
Airflow
(Cannula)
No airflow
Airflow
Thermistor)
Continued Effort
Thoracic
Abdomen
30 seconds

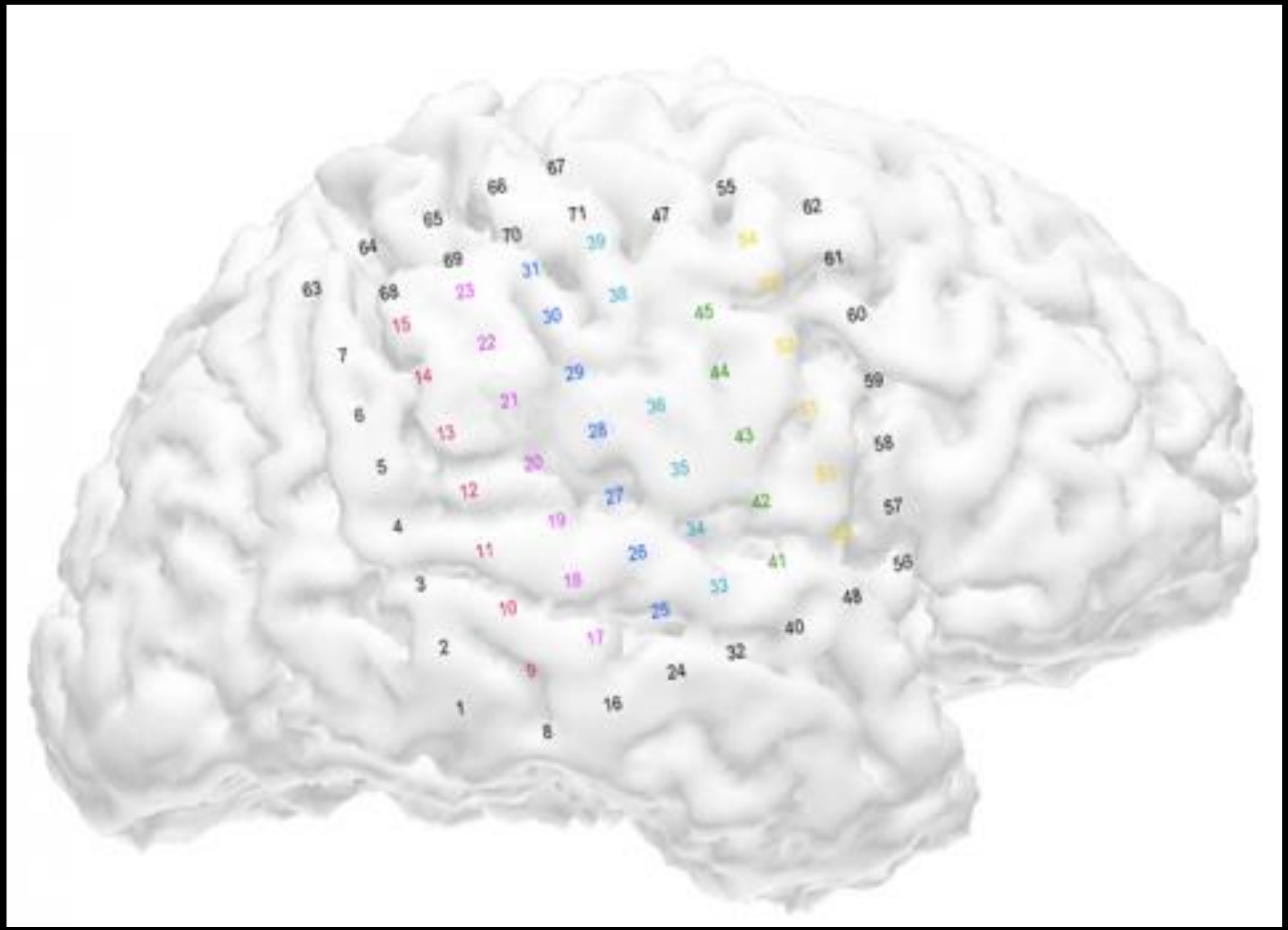
Sleep

Lasagna Plot of Sleep States: Entire–row Sorted



Stroke and Motion Integrity

ECoG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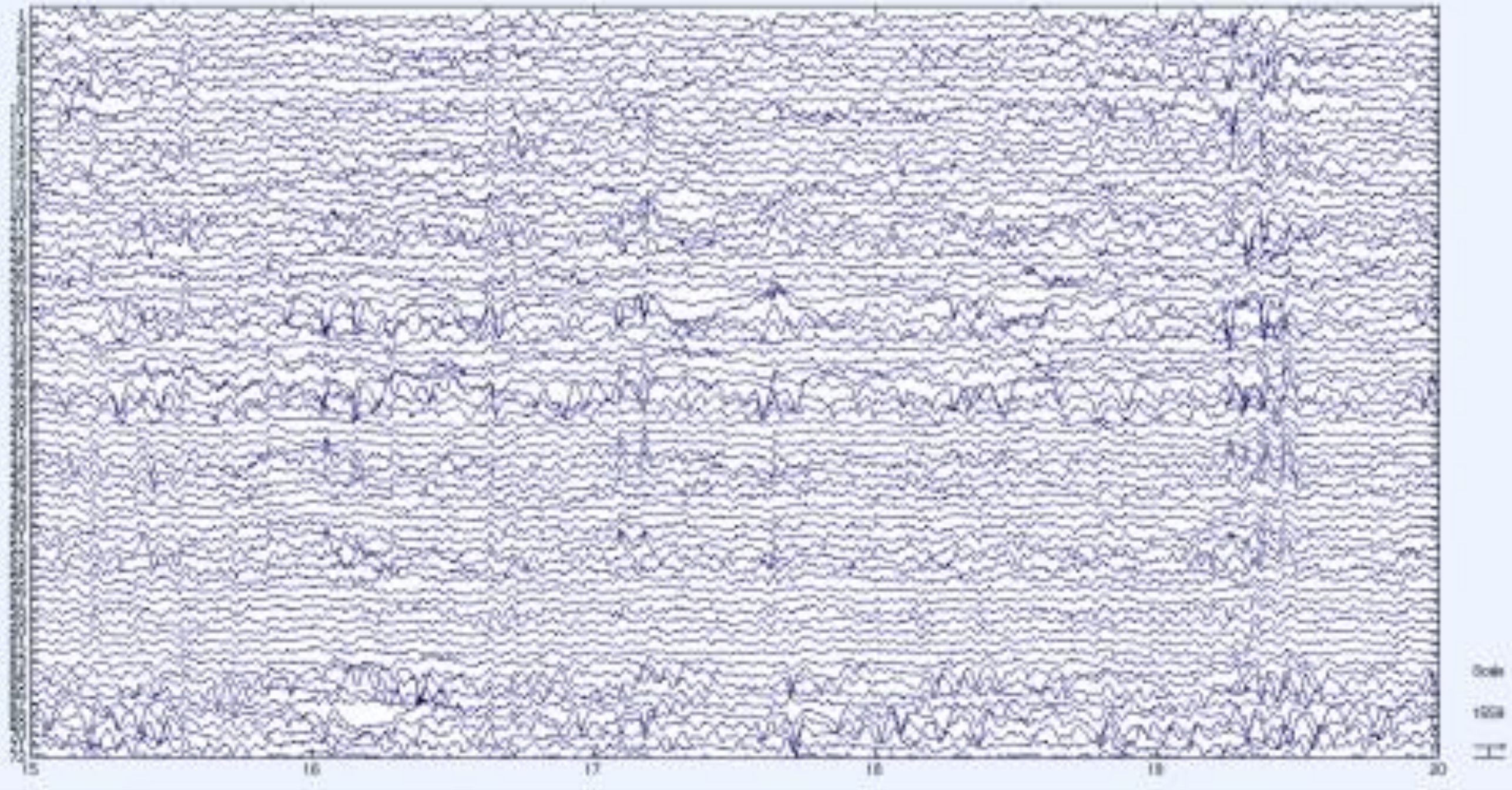
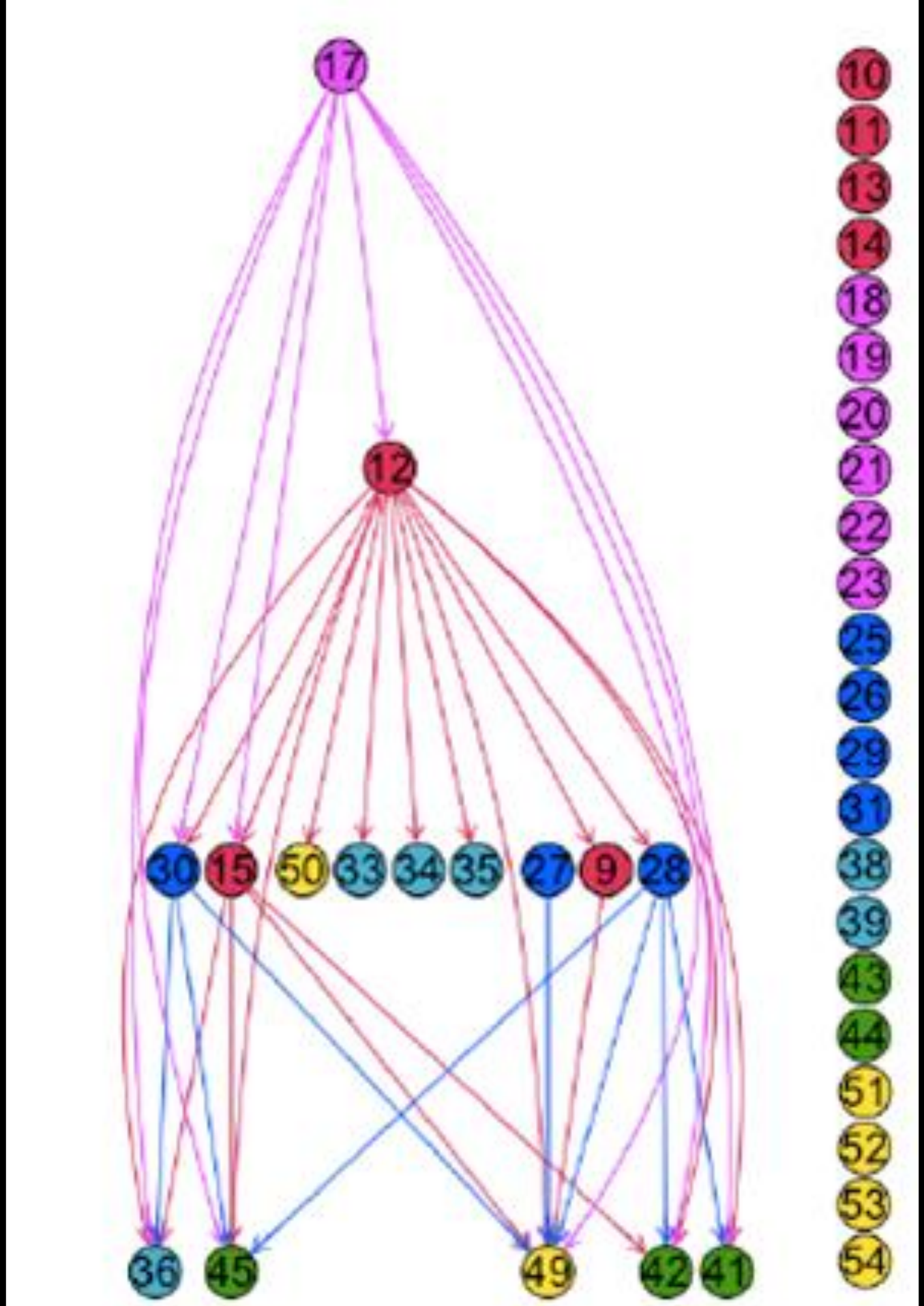
ECoG



ECoG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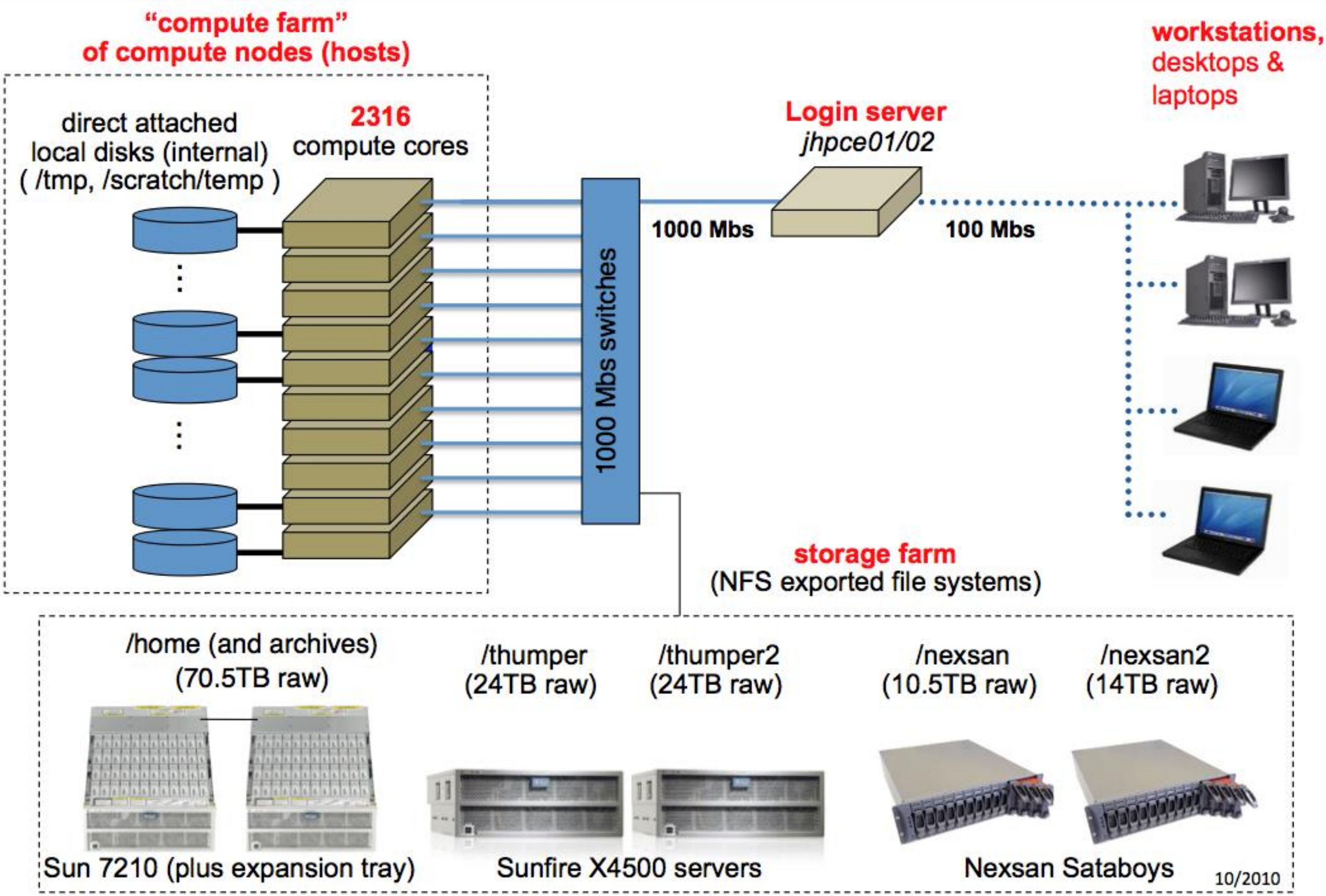
Current Public Health High Performance Computing



Future Public Health High Performance Computing

Thank You!