PET data sharing and BIDS

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Medical Imaging Conference 2023

Rigshospitalet

Data sharing is not a choice anymore

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Data sharing in neuroimaging: experiences from the BIDS project

Melanie Ganz & Russell A. Poldrack

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"Data sharing is moving from a choice that every researcher has to make to an expectation by funding agencies and governments, but also by the research community. At the same time, it requires community efforts to make data sharing easy and to ensure that what is shared can actually be re-used."

And in PET we are on a good track!

- PET is much more than clinical scans with [^{18}F]FDG

- PET can visualize and quantitatively measure the function of biological and cellular processes in vivo

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Review Article

Consensus nomenclature for *in vivo* imaging of reversibly binding radioligands

Robert B Innis[1], Vincent J Cunningham[2], Jacques Delforge[3], Masahiro Fujita[1], Albert Gjedde[4], Roger N Gunn[5], James Holden[6], Sylvain Houle[7], Sung-Cheng Huang[8], Masanori Ichise[9], Hidehiro Iida[10], Hiroshi Ito[11], Yuichi Kimura[12], Robert A Koeppe[13], Gitte M Knudsen[14], Juhani Knuuti[15], Adriaan A Lammertsma[16], Marc Laruelle[2], Jean Logan[17], Ralph Paul Maguire[18], Mark A Mintun[19], Evan D Morris[20], Ramin Parsey[9], Julie C Price[21], Mark Slifstein[9], Vesna Sossi[22], Tetsuya Suhara[11], John R Votaw[23], Dean F Wong[24] and Richard E Carson[25]

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Consensus on publishing PET experiments

- Replication in science can be improved with standards for reporting and sharing of primary research data

Opinion

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Guidelines for the content and format of PET brain data in publications and archives: A consensus paper

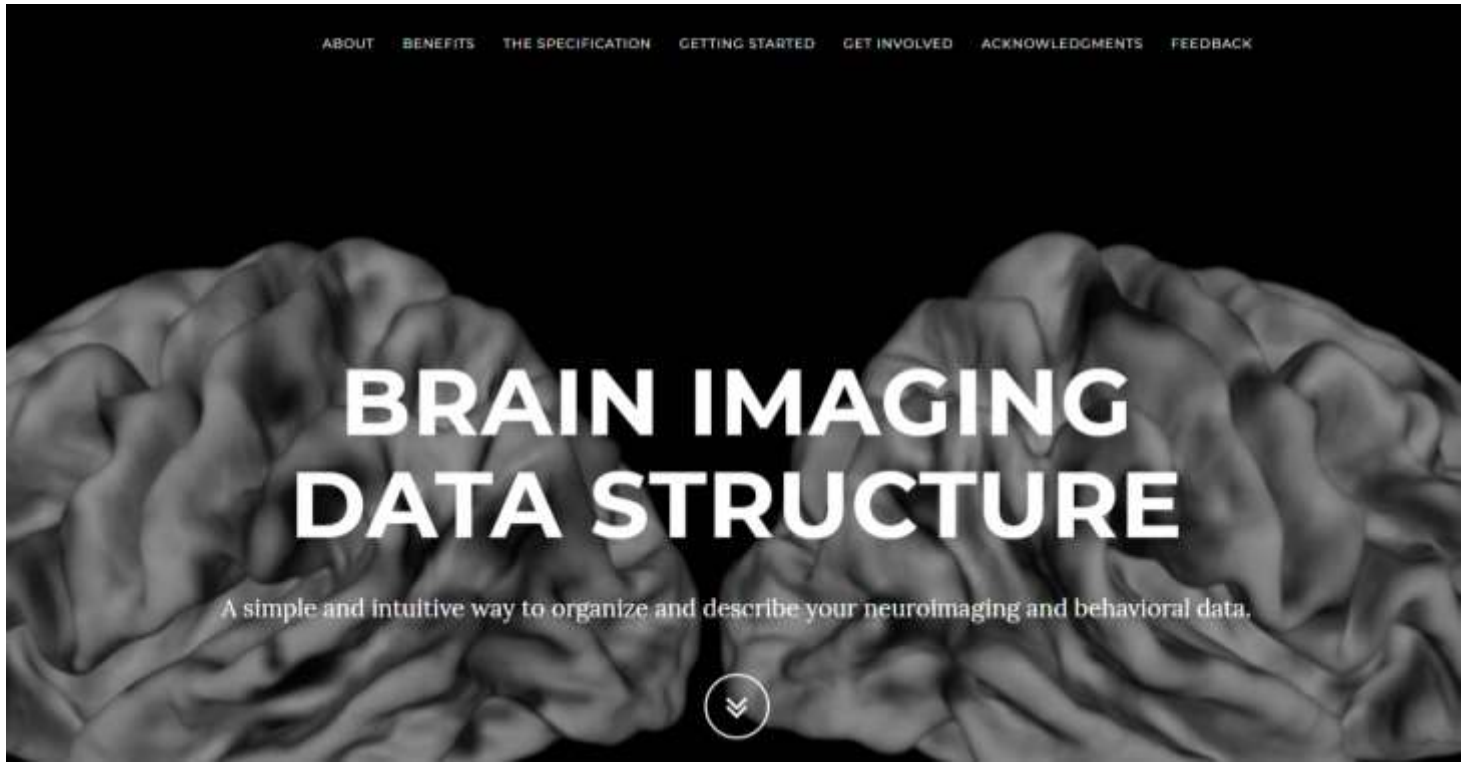
Gitte M Knudsen[1], Melanie Ganz[1], Stefan Appelhoff[2], Ronald Boellaard[3], Guy Bormans[4], Richard E Carson[5], Ciprian Catana[6], Doris Doudet[7], Antony D Gee[8], Douglas N Greve[6], Roger N Gunn[9], Christer Halldin[10], Peter Herscovitch[11], Henry Huang[5], Sune H Keller[12], Adriaan A Lammertsma[3], Rupert Lanzenberger[13], Jeih-San Liow[14], Talakad G Lohith[15], Mark Lubberink[16], Chul H Lyoo[17], J John Mann[18], Granville J Matheson[10], Thomas E Nichols[19], Martin Nørgaard[1], Todd Ogden[20], Ramin Parsey[21], Victor W Pike[14], Julie Price[6], Gaia Rizzo[9], Pedro Rosa-Neto[22,23], Martin Schain[20], Peter JH Scott[24], Graham Searle[9], Mark Slifstein[21], Tetsuya Suhara[25], Peter S Talbot[26], Adam Thomas[27], Mattia Veronese[28], Dean F Wong[29], Maqsood Yaqub[3], Francesca Zanderigo[30], Sami Zoghbi[14] and Robert B Innis[14]

Brain Imaging Data Structure (BIDS)

- It's a data structure ; nothing to do with format per se

- It's about:

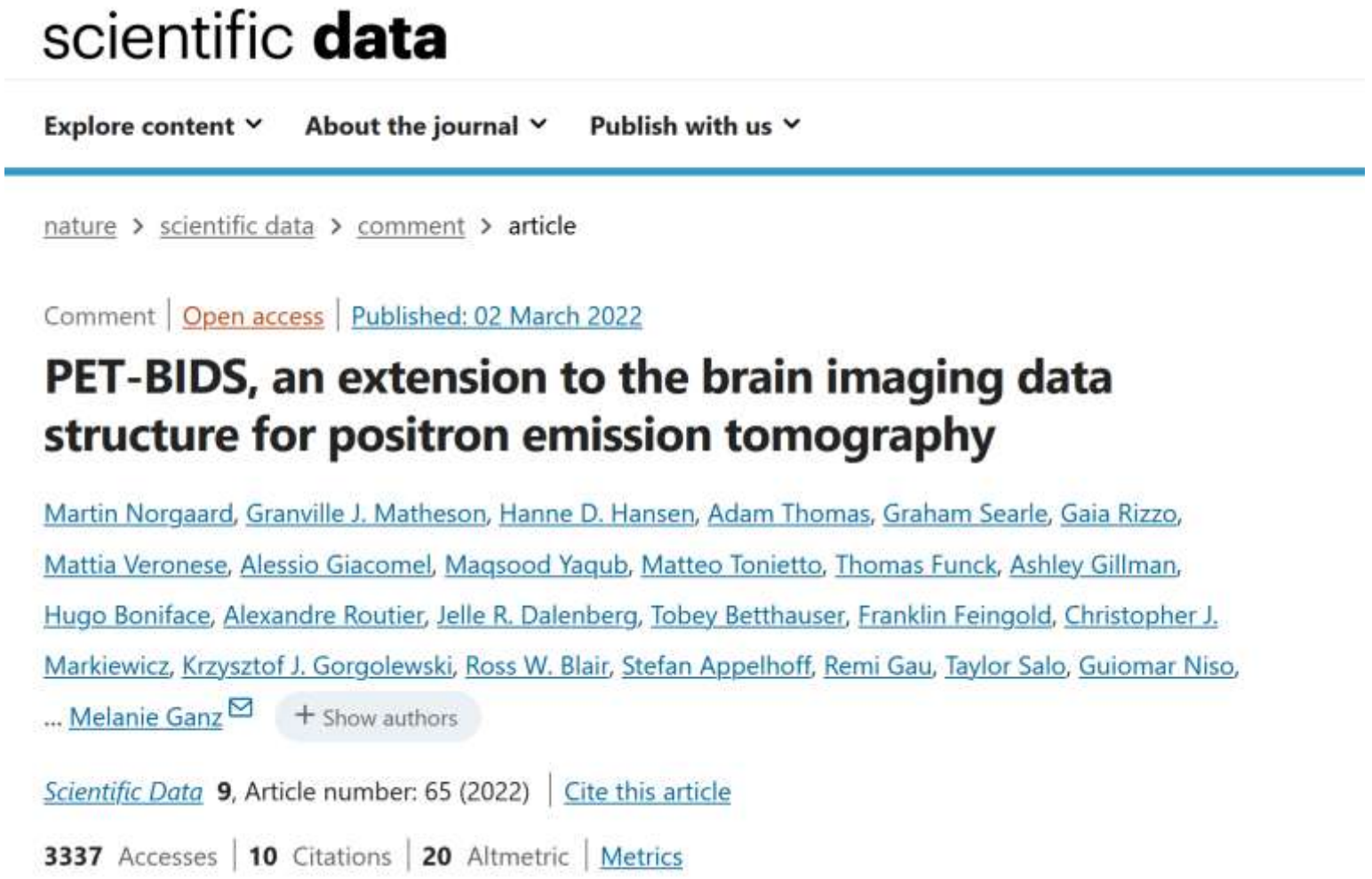
  - how you organize data
  - how you name files
  - how you document metadata
  - uses community standards



bids.neuroimaging.io

PET-BIDS standard

- Community- derived
- Started in 2016/17
- Finalized in 2021
- Published in 2022



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PET-BIDS, an extension to the brain imaging data structure for positron emission tomography

Martin Norgaard, Granville J. Matheson, Hanne D. Hansen, Adam Thomas, Graham Searle, Gaia Rizzo, Mattia Veronese, Alessio Giacomel, Maqsood Yaqub, Matteo Tonietto, Thomas Funck, Ashley Gillman, Hugo Boniface, Alexandre Routier, Jelle R. Dalenberg, Tobey Betthauser, Franklin Feingold, Christopher J. Markiewicz, Krzysztof J. Gorgolewski, Ross W. Blair, Stefan Appelhoff, Remi Gau, Taylor Salo, Guiomar Niso, ... Melanie Ganz + Show authors

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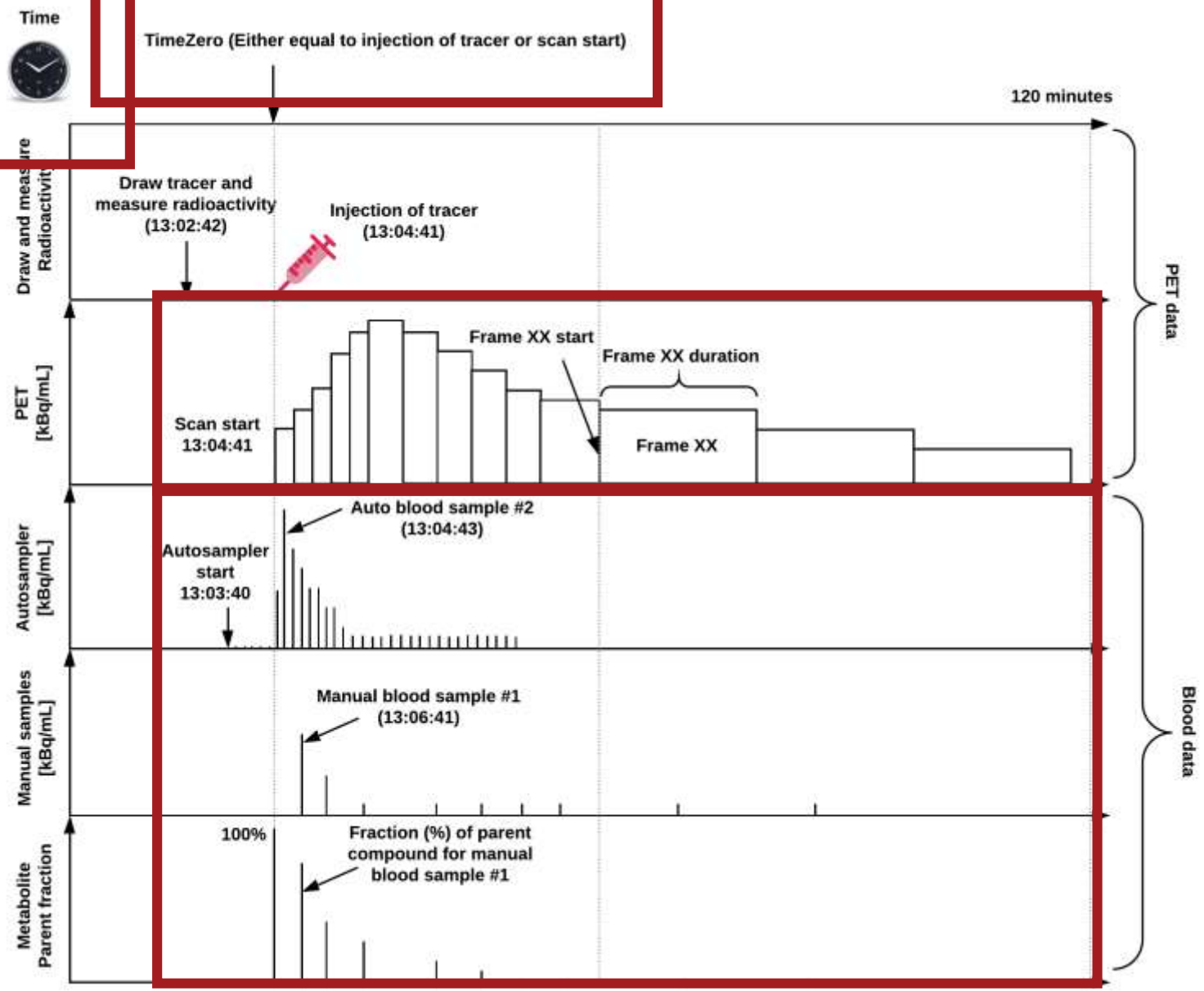
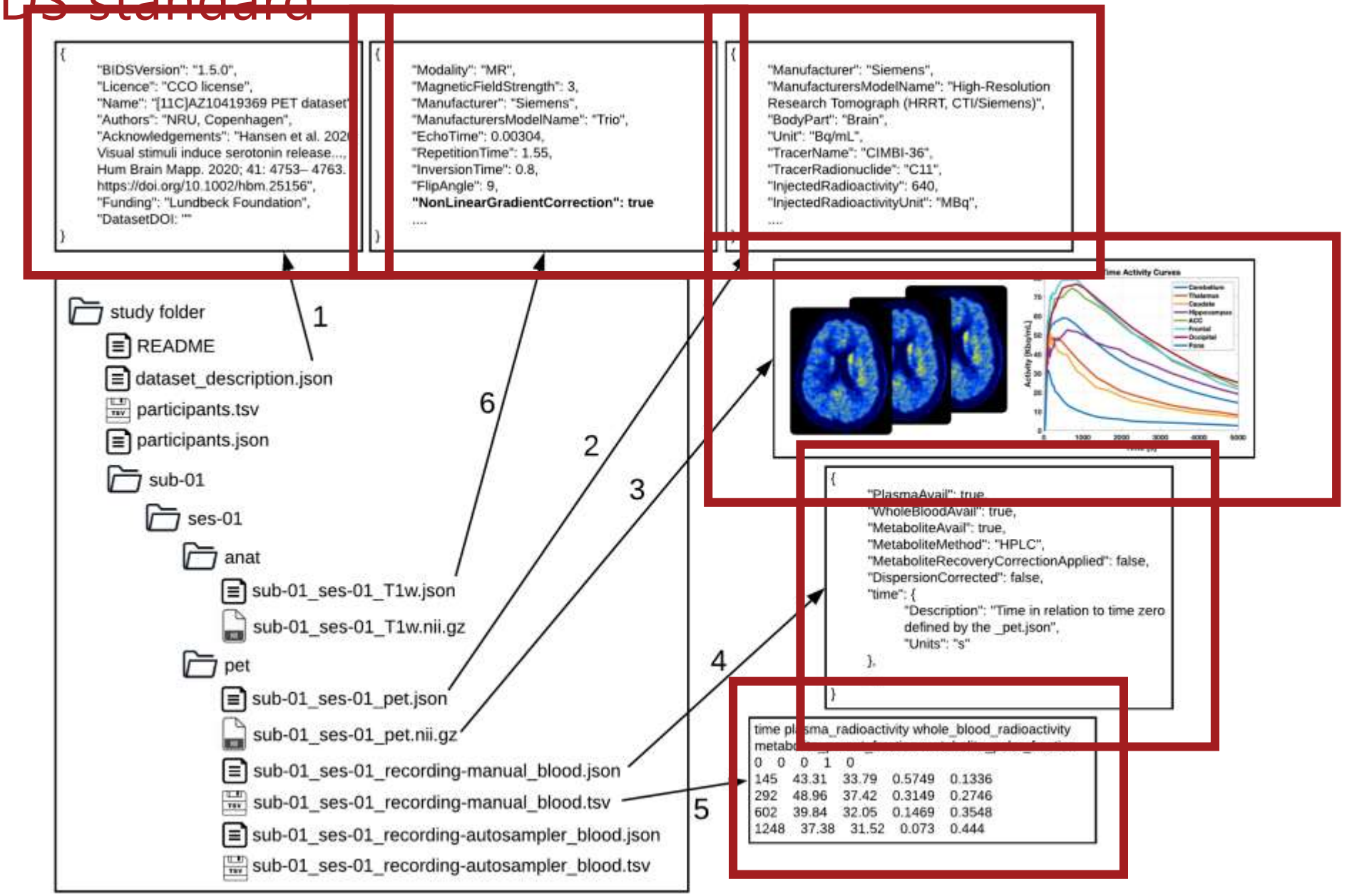
PET-BIDS ~~standard~~



PET-BIDS standard

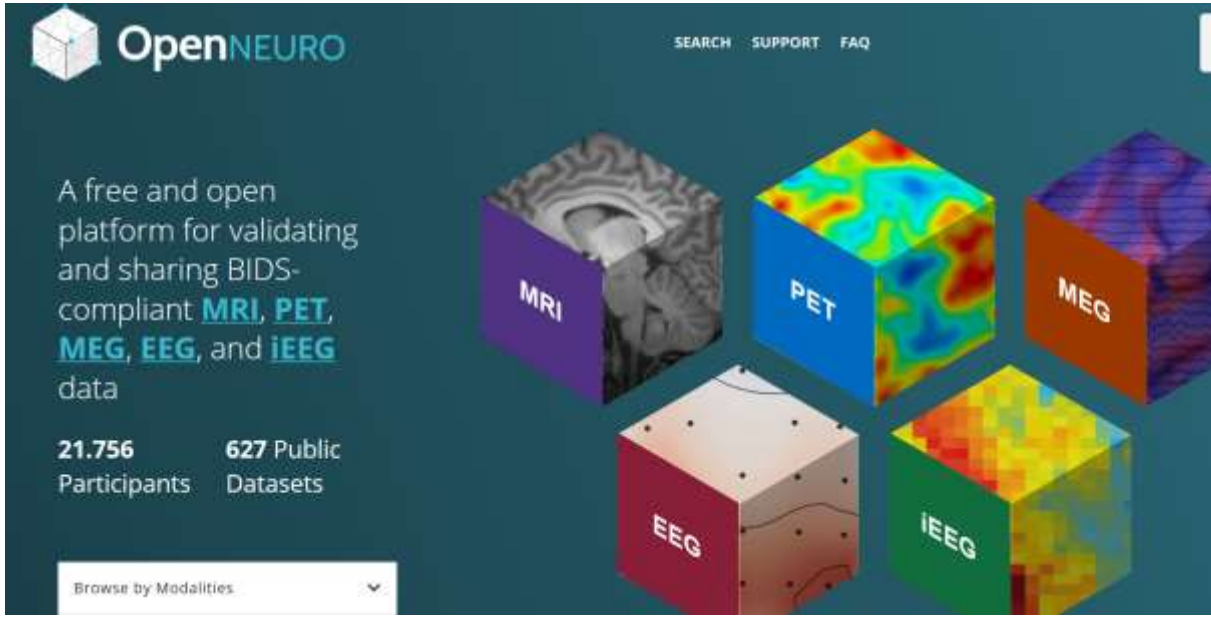


From OpenNeuro …

- Official repository for BRAIN Initiative
- Part of the Amazon Public Datasets project
- 945 public datasets
- 36,928 participants
- 10-20 new dataset uploads per
- month
- Serving 1000 + downloads/month (almost 20TB of data)
- Over 8K users/month

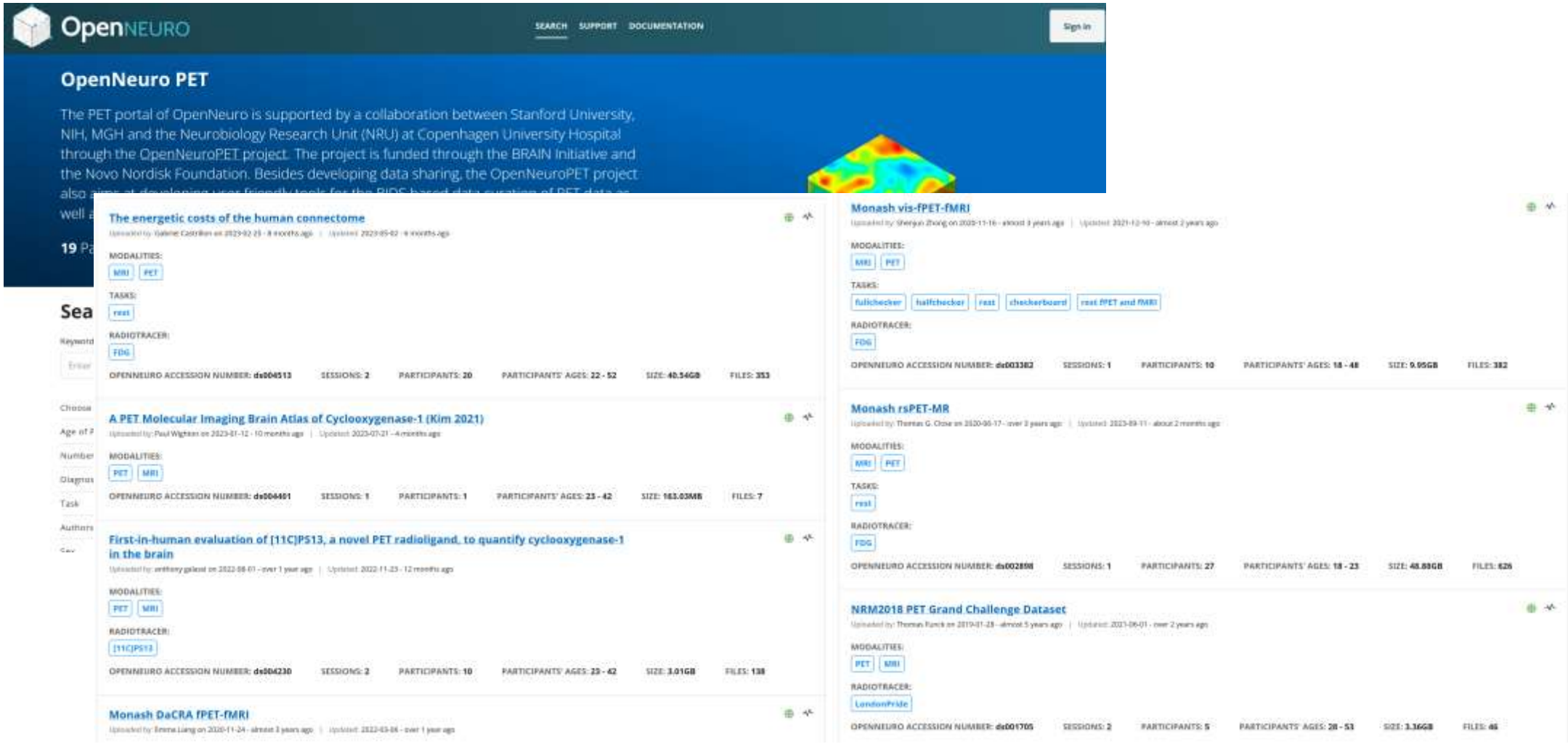
...to OpenNeuroPET

- Establish PET archive as an extension of OpenNeuro
  - Standard format and content
  - "Best Practices" for pipelines and QC checks
- Educate and seek feedback from the PET user community
- Establish average images of receptor density, connecting to larger fMRI community



openneuro.org

OpenNeuroPET status



Thank you!

https://openneuropet.github.io/
https://public-neuro.github.io/

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NIH National Institute of Mental Health



Athinoula A. Martinos Center For Biomedical Imaging

Harvard–MIT Health Sciences & Technology

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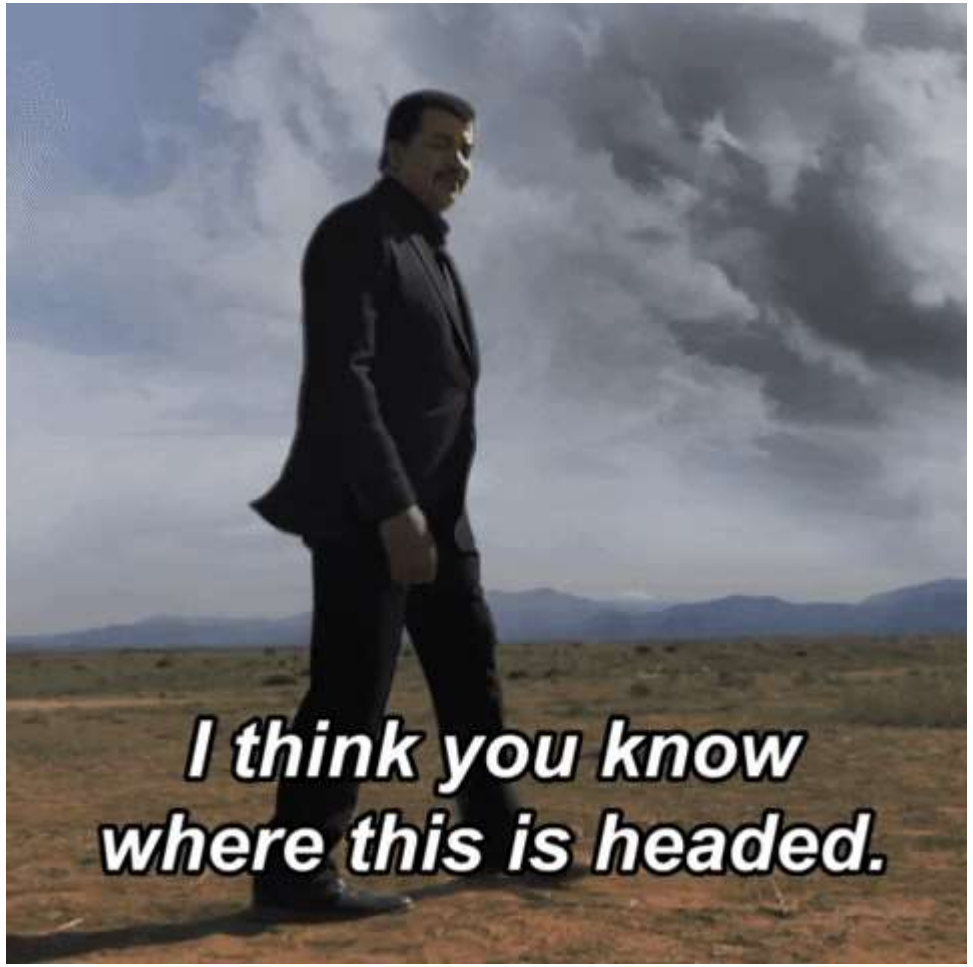
We want you!



- Check out our mission statement on https://openneuropet.github.io/
- Take a peak at PET2BIDS on https://github.com/openneuropet to get help in converting your data
- Come and meet with us during our online office hours on November 14th and 16th between 8 and 18 UTC, book a slot via an e-mail to openneuropet@gmail.com

Thank you!

https://openneuropet.github.io/
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