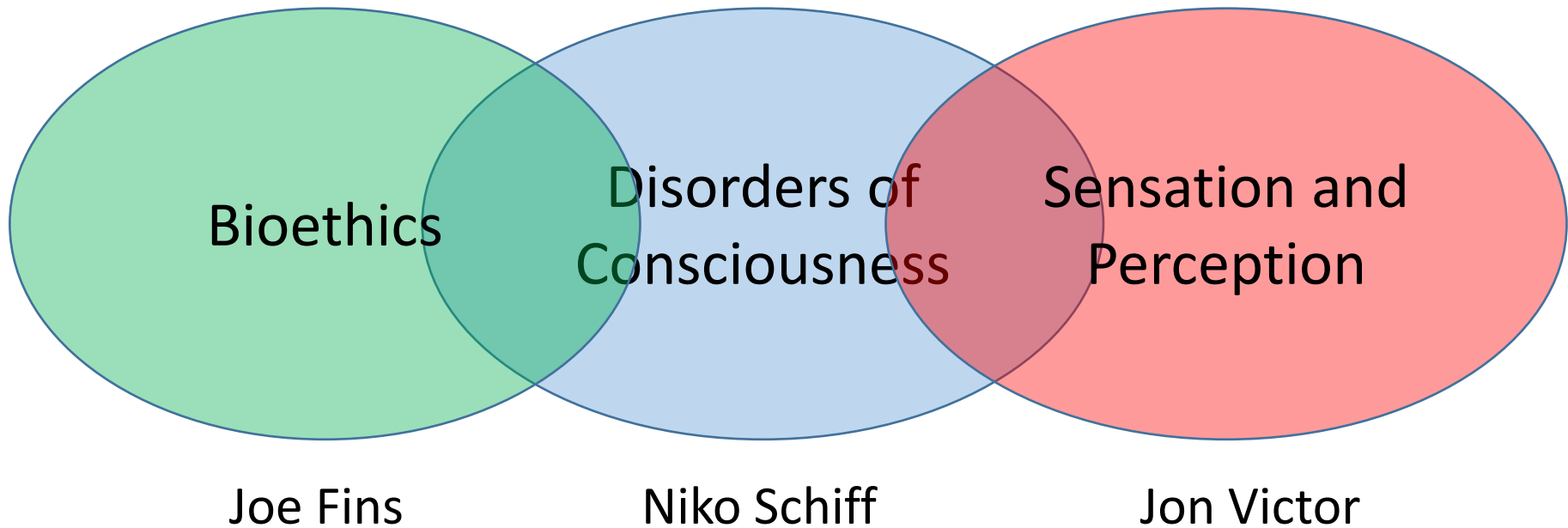


Systems Neurology AOC

Co-directors: Jonathan Victor, Nicholas Schiff

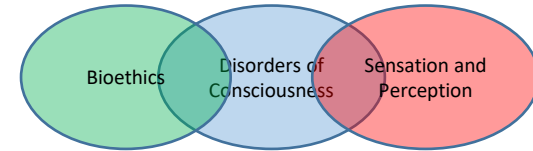
Broad Range of Problems



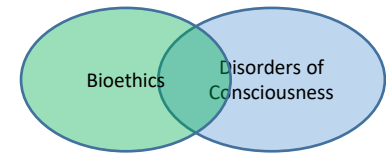
Broad Range of Approaches

- Clinical Studies

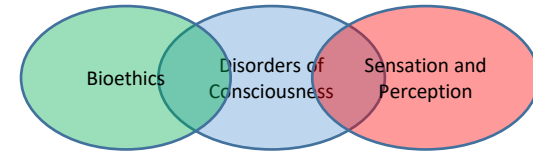
- Observational: imaging, EEG, behavior
- Interventional: neuromodulation, including first-in-man CT-DBS



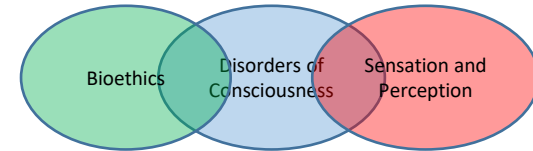
- Advocacy



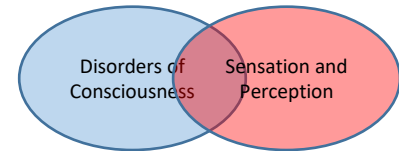
- Primate Neurophysiology



- Human Neurophysiology and Psychophysics



- Mathematics: modeling, signal processing



Recent Publications

From basic to clinical neuroscience

Annals of
NEUROLOGY

An Official Journal of
the American Neurological
Association and the
Child Neurology Society



Research Article | Open Access | CC BY-NC-ND

Prolonged Unconsciousness is Common in COVID-19 and Associated with Hypoxemia

Greer Waldrop MD, ScM, Seyed A. Safaviyia MD, PhD, Megan E. Barra PharmD, Sachin Agarwal MD, MPH, David A. Berlin MD, Amelia K Boehme PhD, MSPH, Daniel Brodie MD, Jacky M. Choi MPH, Kevin Doyle MA, Joseph J. Fins MD, Wolfgang Ganglberger MSc, Katherine Hoffman MS, Aaron M. Mittel MD, David Roh MD, Shiban S. Mukerji MD, PhD, Caroline Der Nigoghossian PharmD, Soojin Park MD, Edward J. Schenck MD, John Salazar-Schicchi MD, Qi Shen PhD, Evan Sholle MS, Angela G. Velazquez MD, Maria C. Walline MD, M. Brandon Westover MD, PhD, Emery N. Brown MD, PhD, Jonathan Victor MD, PhD, Brian L. Edlow MD, Nicholas D. Schiff MD, Jan Claassen MD ✉ ... See fewer authors ^

First published: 07 March 2022 | <https://doi.org/10.1002/ana.26342> | Citations: 3

Efficient coding of natural scene statistics predicts discrimination thresholds for grayscale textures

Tiberiu Tesileanu^{1*}, Mary M Conte², John J Briguglio³, Ann M Hermundstad³, Jonathan D Victor², Vijay Balasubramanian⁴



Olfactory Navigation and the Receptor Nonlinearity

Jonathan D. Victor,¹ Sebastian D. Boie,¹ Erin G. Connor,² John P. Crimaldi,² G. Bard Ermentrout,³ and Katherine I. Nagel⁴



Journal of Computational Neuroscience (2018) 45:59–82

A method for decomposing multivariate time series into a causal hierarchy within specific frequency bands

Jonathan D. Drover¹ · Nicholas D. Schiff¹

BRAIN COMMUNICATIONS

Low-level language processing in brain-injured patients

Parul Jain,¹ Mary M. Conte,² Henning U. Voss,^{3,4} Jonathan D. Victor^{2,5}, and Nicholas D. Schiff^{2,5,6}

Annals of
NEUROLOGY

An Official Journal of
the American Neurological
Association and the
Child Neurology Society



Research Article

Independent Functional Outcomes after Prolonged Coma following Cardiac Arrest: A Mechanistic Hypothesis

Peter B. Forgacs MD, Orrin Devinsky MD, Nicholas D. Schiff MD ✉

Current Biology

Cognitive influences on fixational eye movements

Yen-Chu Lin, Janis Intoy, Ashley M. Clark, Michele Rucci, Jonathan D. Victor

Spectral Content of Electroencephalographic Burst-Suppression Patterns May Reflect Neuronal Recovery in Comatose Post-Cardiac Arrest Patients

Krithiga Sekar,^{**†} Nicholas D. Schiff,^{†§} Douglas Labar,[†] and Peter B. Forgacs^{††§}

Recovery from disorders of consciousness: mechanisms, prognosis and emerging therapies

Brian L. Edlow^{1,2}, Jan Claassen², Nicholas D. Schiff⁴ and David M. Greer^{5,6} ✉

NATURE REVIEWS | NEUROLOGY | VOLUME 17 | MARCH 2021 | 135



ELSEVIER

Cortex

Volume 152, July 2022, Pages 136-152



Research Report

Electrophysiological correlates of thalamocortical function in acute severe traumatic brain injury

William H. Curley^{a,b}, Yelena G. Bodien^{b,c}, David W. Zhou^{b,d}, Mary M. Conte^e, Andrea S. Foulkes^f, Joseph T. Giacino^{c,g}, Jonathan D. Victor^{a,h}, Nicholas D. Schiff^{a,h,i}, Brian L. Edlow^{b,i,j,k,l}

Presynaptic dopamine deficit in minimally conscious state patients following traumatic brain injury

Esteban A. Fridman,¹ Joseph R. Osborne,² Paul D. Mozley,³ Jonathan D. Victor¹ and Nicholas D. Schiff¹

INTERFACE Geometry of spiking patterns in early visual cortex: a topological data analytic approach

royalsocietypublishing.org/journal/rs

Andrea Guidolin^{1,2}, Mathieu Desroches³, Jonathan D. Victor⁴, Keith P. Purpura¹ and Serafim Rodrigues^{1,5}

J Clin Neurophysiol 2019

NEJM

Ann. Neurol.

Brain

Curr. Biol.

J. Neurosci.

Vision Res.

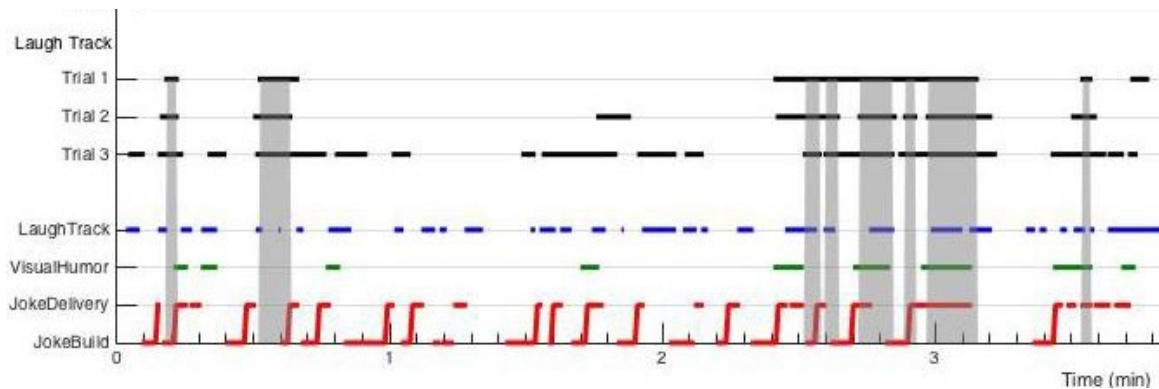
Phys Rev. E

More at www-users.med.cornell.edu/~jdvicto/labpubs.html

Trainee Projects

- WMC Students

- Sarah Parauda (AOC, completed 2018): emotional responses in disorders of consciousness



- Vruj Patel (AOC, completed 2023): analysis of electrocorticographic signals from brain-machine interfaces
- Ryka Sehgal (WMC '23) : prognostic markers in acute brain injury

- Recent CGSMS PhD Students

- Jackie Gottshall: sleep biomarkers in disorders of consciousness (PhD, 2020)
- Y-C. Lin: cognitive control of fixational eye movements (PhD, 2022)
- Parul Jain: phonemic processing in disorders of consciousness (PhD, 2023)
- Suniyya Waraich: representation of continuous vs. categorical concepts (PhD expected, 2024)

AOC Activities

- Mentored independent research
- Lab meetings (basic and clinical)
- Participation in ongoing research
- Participation in DOC and ethics consultations
- Seminar series
 - BMRI Work in Progress
 - BMRI Progress in Neuroscience

Participating Faculty

Jon Baker, Mary Conte, Jon Drover, Joe Fins, Keith Purpura,
Niko Schiff, Jon Victor

For further information: email jdvicto@med.cornell.edu