**Jerzy O. Szablowski, Ph.D.**

6500 Main St., Houston, TX 77005

szablowskilab.org

Work: (713)-348-8738 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_js170@rice.edu

**EDUCATION**

2009-15 California Institute of Technology (Caltech)

 Ph.D., Chemical Biology

 Advisor: Peter B. Dervan

2005-09 Massachusetts Institute of Technology (MIT)

 B.Sc., Biological Engineering

**ACADEMIC CAREER**

2020- Assistant Professor, Rice University, Bioengineering, and Rice Neuroengineering Initiative (RNI)

2015-19 Postdoctoral Fellow, Caltech, Chemical Engineering, Advisor: Mikhail Shapiro

**AWARDS** **AND HONORS**

2023 NIH Director’s New Innovator Award

2022 NIH NIBIB Trailblazer

2022 DARPA Young Faculty Award

2021 Packard Fellowship for Science and Engineering

2020 Outstanding Undergraduate Research Mentor Award, Rice University

2018 NARSAD Young Investigator, Brain and Behavior Research Foundation

2009 Bauer Fellowship for Graduate Studies

**TEACHING AND MENTORSHIP**

2020- Lecturer, BioE 422 / 522: Gene therapy, Rice University, Houston, TX (*(Teaching evaluations, overall*

 *effectiveness: Fa 24, 1.37; Fa 23: 1.0, Sp 23: 1.7, Fa 22: 1.0, Sp 22: 1.2, Fa 22: 1.31, Sp 21: 1.2, Fa 20: 1.56)*

2019 Lecturer, Bi 23: Current Advances in Gene Therapy, Caltech, Pasadena, CA;

Postdocs: Zhimin Huang, Ph.D. (2020-24), Assistant Professor at the University of Pittsburgh

Ph.D. students: Sangsin Lee, Ph.D. (2020-24), postdoc at Stanford University, Alice Ting’s lab

Trainee awards: NSF GRFP (x3), NDSEG, and NSF NRT fellowships (x2), Goldwater scholarships (x2), BRAIN initiative trainee highlight awards (x2), JSPS postdoctoral fellowship, Knight-Hennessy fellowship.

**ENTERPRENEURSHIP**

2024- Co-founder Imprint Bio. Inc.

**PUBLICATIONS (SELECTED)**

‘#’ denotes equal contribution; \* corresponding author; # co-first author

1. Watanabe S, Lee S, Harb M, Nouraein S, Raisley E, Li H, Buitrago N, Pforr B, **Szablowski JO\***, Monitoring in vivo transcription with synthetic serum markers, *bioRxiv 2024.12.10.627810, (2024)*
2. Huang Z., Mitrofan A, Nouraein S, Horak C, Seo JP, Harb M, Jin R, **Szablowski JO**\*, Site-specific Brain Therapeutics*, in revision, Science Translational Medicine*
3. Seo JP, Trippett JS, Lee S, Huang Z, Nouraein S, Wang R, **Szablowski JO**\*. Acoustically-Targeted Measurement of Transgene Expression in the Brain, *Science Advances, 10, eadj7686, Science Advances* (2024)
4. Li HR, Harb M, Heath JE, Trippett JS, Shapiro MG\*, **Szablowski JO**\*. Engineering viral vectors for acoustically targeted gene delivery. *Nature Communications*. Jun 10;15(1):4924. (2024)
5. **Szablowski JO\***, Molecular Engineering Technology for Studying and Treating the brain, *Chemical Engineering Progress*, 5 (2024)
6. Lee, S., Nouraein, S., Kwon, J.J., Huang, Z., Wojick, J.A., Xia, B., Corder, G. and **Szablowski, J.O.\*,** Engineered serum markers for non-invasive monitoring of gene expression in the brain*. Nature Biotechnology, in press* (2024)
7. Nouraein S, Lee S, Saenz VA, Del Mundo HC, Yiu J, **Szablowski JO\*.** Acoustically targeted noninvasive gene therapy in large brain volumes. *Gene Therapy;* 31(3):85-94 (2024)
8. Chen, M., Kim, B., Jarvis, M., Fleury, S., Deng, S., Nouraein, S., Butler, S., Chambers, C., Hodges, H.C., **Szablowski, JO**. Suh, J., and Veiseh O., Targeted immunosuppression enhances repeated gene delivery., *Gene Therapy* (30):429–442 (2023)
9. Xia B, Sebesta C, Lee S, Nair V, Zhao X, Coffler S, Robinson JT\*, **Szablowski JO\***. Biohybrid approaches to interface with the nervous system: the best of both worlds. *Current Opinion in Biotechnology*. 2021 Dec 1;72:86-94.
10. **Szablowski, Jerzy O\***., and Manwal Harb. "Focused ultrasound induced blood-brain barrier opening for targeting brain structures and evaluating chemogenetic neuromodulation." *JoVE (Journal of Visualized Experiments)* 166 (2020): e61352.
11. **Szablowski JO**#, Bar-Zion A#, Shapiro MG, Achieving spatial and molecular specificity with ultrasound-targeted biomolecular therapeutics, *Acc. Chem. Res.* 52, 9, 2427-2434 (2019)
12. **Szablowski JO**, Lue B, Lee-Gosselin A, Malounda D, Shapiro MG, Acoustically Targeted Chemogenetics for Noninvasive Control of Neural Circuits, *Nature Biomedical Engineering*, 2 (7), 475*,* (2018)[Cover article. Highlighted in News and Views, F1000 Prime]
13. Maresca D# , Lakshmanan A#, Abedi M, Bar-Zion A, Farhadi A, Lu GJ, **Szablowski JO**, Wu D, Yoo S, Shapiro MG, Biomolecular Ultrasound and Sonogenetics, *Annu. Rev. Chem. Biomol. Eng,* 9:229-252 (2018)
14. Lu GJ, Farhadi A, **Szablowski JO**, Barnes SR, Lakshmanan A, Bourdeau RW, Shapiro MG, Acoustomagnetic imaging with gas-filled protein nanostructures, *Nature materials* 17 (5), 456 (2018) [Cover article. Highlighted in News and Views.]
15. Piraner DI, Farhadi A, Davis HC, Wu D, Maresca D, **Szablowski JO**, Shapiro MG, Going Deeper: Biomolecular Tools for Acoustic and Magnetic Imaging and Control of Cellular Function, Biochemistry 56 (39), 5202-5209 (2018)
16. Mysore VS, **Szablowski JO**, Dervan PB, Frost PJ. A DNA-binding Molecule Targeting the Adaptive Hypoxic Response in Multiple Myeloma has Potent Anti-tumor Activity. *Mol Cancer Res.* 14 (3), 253-266 (2016)
17. **Szablowski JO,** Raskatov JA, Dervan PB. An HRE-binding Py-Im polyamide impairs hypoxic signaling in tumors. *Mol. Cancer Ther*. 15 (4), 608-617 (2016)
18. Raskatov JA, **Szablowski JO**, Dervan PB, “Tumor Xenograft Uptake of a Py Im Polyamide Varies as a Function of Cell Line Grafted”, *J. Med. Chem.,* **57**:8471-8476 (2014)
19. Yang F, Nickols NG, Li BC, **Szablowski JO**, Hamilton SR, Meier JL, Wang C, Dervan PB. "Animal Toxicity of Hairpin Pyrrole-Imidazole Polyamides Varies with the Turn Unit”, *J. Med. Chem.*, **56**:7449-7457, (2013).
20. Nickols NG**#**, **Szablowski JO**#, Hargrove AE, Li BC, Raskatov JA, Dervan PB. "Activity of a Py-Im Polyamide Targeted to the Estrogen response Element," *Mol. Cancer Ther.*, **12**:675-684, (2013).
(Article selected as one of the ‘AACR hot topics, 2013’, available without subscription).
21. Vilanova C, Hueso A, Palanca C, Marco G, Pitarch M, Otero E, Crespo J, **Szablowski JO**, Rivera S, Domínguez-Escribà L, Navarro E, Montagud A, Fernández de Córdoba P, González A, Ariño J, Moya A, Urchueguía J& Porcar M, "Aequorin-expressing yeast emits light under electric control",
*J Biotechnology*, 152(3):93-5, (2011)
22. Shapiro MG**#**, Westmeyer GG**#**, Romero P, **Szablowski JO**, Küster B, Shah A, Otey CR, Langer R, Arnold FH, & Jasanoff AP, “Directed evolution of an MRI contrast agent for noninvasive imaging of dopamine”. *Nature Biotechnology*, 28:264–270 (2010)
23. Shapiro MG, **Szablowski JO**, Langer R, Jasanoff AP, “Protein nanoparticles engineered to sense kinase activity in MRI”, *JACS*, 131(7):2484-2486, (2009)

**GRANT SUPPORT**

Current Research Support

ARIA Neurotechnologies (02/01/2025-01/31/2028, Co-PI, ~$2,500,000 total)

Focused Ultrasound Foundation research grant, *Development of viral vectors optimized for noninvasive, site-specific gene delivery to the brain*, (09/01/2024-02/28/2026), ($128,899 total)

NIH Director’s New Innovator Award, DP2EB035905, Monitoring neuronal activity with a blood test - Released Markers of Activity (RMA), 09/01/2023-08/31/2028, 100% PI, ($2,347,500 total)

NIH NIBIB Trailblazer Award, R21EB033059, *Noninvasive site-specific measurement of gene expression in deep tissues with secreted reporters*, 09/13/2022-05/31/2025, (100% PI), ($585,920 total)

Packard Fellowship, David and Lucile Packard Foundation ($875,000 total), 11/01/21-10/31/26

**The G. Harold & Leila Y. Mathers Foundation research grant, ID #MF-2012-01228, *Noninvasive neuromodulation as a widely applicable therapy for brain disorders;* (total direct cost: $385,000; 100% PI), 4/15/2021 - 4/14/2025**

**MJ Fox Foundation, MJFF-020154, Improved Outcome Measures, *Development of PD biomarkers using focused ultrasound-based noninvasive biopsy*, 08/01/2021-07/31/2023, (2 years; $447,510, Contact PI; total direct cost: ~$300,000 to the PI)**

**Merkin Institute for Translational Research, "Engineering and Validation of Viral Vectors for Ultrasound-Targeted Gene Delivery to the Brain”, Shapiro (PI), Role: Co-I (~$30,000 to Szablowski), Dates TBD**

**Rice Synthetic Biology Institute, “Recording gene expression history with a blood test”, 11/05/2024-10/05/2025, $58,528 (50% Co-PI),**

Completed Research Support (past three years)

**DARPA-RA-21-03-01-YFA1-FP-003, *Therapeutics for rapid cold adaptation - beyond the natural human capability*, , 11/1/2022 – 10/31/2025, 70% PI, $500,000 total, with additional $500,000 option.**

NIH NEI, R21EY032596, *Acoustically targeted, high-resolution, site-specific, transretinal delivery of macromolecules*, 09-30-2022 –08-31-2024, Co-PI (50%)($434,598 total)

NARSAD Young Investigator grant, *Acoustically Taregeted Chemogenetics,* Brain and Behavior Research Foundation, funding: 01/2019-01/2021, *($35,000/yr, 2 years)*

John S. Dunn Foundation Collaborative Research Award, *Region-specific and Brain-wide Gene Therapy for Neurodevelopmental Disorders*, (Total direct: $100,000, 50% PI), 09/01/2020 – 08/31/2022

**DARPA-SN-21-05-KEY-PA-006, DARPA BTO Keystone Study, LOI stage, *High-speed biophysical and biochemical monitoring to discover early markers of unconventional brain injury,* (Co-I with Luan (PI), Villapol, Robinson, Xie, Kemere; ~$350,000 to the PI)**

**Welch Foundation Research Grant, Welch Foundation, *Engineering a new class of site-specific therapeutics for brain disorders*, (Total direct cost: $240,000; 100% PI), 06/01/2020-05/31/2023**

**SELECTED PRESENTATIONS**

1. Szablowski JO, Control and Monitoring of Intact Tissues with Noninvasive Neuroengineering, Bioorganic Chemistry GRC June 9-14th, 2025, invited talk (upcoming)
2. Szablowski JO, Control and Monitoring of Intact Tissues with Noninvasive Neuroengineering, 2025 Frontiers in Neuroscience Plenary Session Speaker, April 5-9, 2025, invited talk (upcoming)
3. Szablowski JO, *Control and Monitoring of Intact Tissues with Noninvasive Neuroengineering*, MIT Brain and Cognitive Sciences Neurotechnology Symposium, 11/20/2024, invited talk
4. Szablowski JO, *Control and Monitoring of Intact Tissues with Noninvasive Neuroengineering,* Broad Institute of MIT and Harvard, 05/23/2024, invited talk
5. Szablowski JO, *Monitoring gene expression in the brain with synthetic serum markers*, Acoustical Society of America, 05/13/2024, Ottawa, ON, invited talk
6. Szablowski JO, *Noninvasive monitoring of transgene expression in the brain,* American Institute for Ultrasound in Medicine (AIUM), April 10th, 2024, Austin, TX, invited talk
7. Szablowski JO, *Control and Monitoring of Cells in Intact Tissues through Noninvasive Neuroengineering*, Boston University, Neurophotonic Center and the Center for Systems Neuroscience, Boston, MA, April, 2024, invited talk
8. Szablowski JO, *Molecular Engineering in Gene Delivery with Focused Ultrasound*, Focused Ultrasound Gene Therapy Symposium (November 16-17th, 2023, Washington DC), invited talk
9. Szablowski JO, *Control and Monitoring of Cells in Intact Tissues through Noninvasive Neuroengineering*, Woodward Departmental Colloquium, Dept. of Chemistry and Chemical Biology, Harvard University, Boston, MA, November 2nd, 2023, invited talk
10. Szablowski JO, *Control and Monitoring of Intact tissues with Noninvasive Neuroengineering,* University of Washington, Biological Structure Seminar series, Center of Excellence in Neurobiology of Addiction, Pain, and Emotion, October 13th 2023, invited talk
11. Szablowski JO, *Noninvasive Monitoring Brain Physiology*, AAPM (July 23-27, 2023, Houston), invited talk
12. Szablowski JO, *Noninvasive Monitoring of Brain Physiology*, SEED (2023, Los Angeles), June 2nd, invited talk
13. Szablowski JO, *Noninvasive Neuroengineering*, NeuroNano, SBMT (Feb 2023), invited talk
14. Szablowski JO, *Noninvasive Neuroengineering*, UT Health Houston, Dept. of Neuroscience, Oct. 5th, 2022, invited talk
15. Szablowski JO, *Noninvasive Neuroengineering*, D-CFAR Research Forum, October 10th, 2022, invited talk
16. Szablowski JO, *Noninvasive Neuroengineering*, NeuroNano, Columbia University, 07/21/2022, invited talk
17. Szablowski JO, *Noninvasive Neuroengineering*, VIB Neurotechnologies (KU Leuven, Belgium), 28/09/2022, invited talk
18. Szablowski JO, *Neuroengineering*, Brain Bee 2021, educational talk for high school students (*03/2021*).
19. Szablowski JO, Li R, Heath J, Shapiro M, *P370.05: A viral vector engineered for improved spatially-specific noninvasive gene delivery to the brain.,* SFN Global Connectome *(01/11/2021)*
20. Szablowski JO, Li R, Heath J, Shapiro M, *A viral vector engineered for improved focused ultrasound BBB opening gene delivery.,* FUS Foundation annual meeting *(11/2020)*
21. Jerzy Szablowski, Audrey Lee-Gosselin, Brian Lue, Dina Malounda, Mikhail Shapiro, *Acoustically Targeted Chemogenetics for a Noninvasive Spatially, Temporally, and Cell-specific Control of Neural Circuits*., BMES 2018 Annual Meeting, oral presentation, 10/19/2018
22. Szablowski JO, Lue B, Lee-Gosselin A, Malounda D, Shapiro MG, *Acoustically Targeted Chemogenetics for noninvasive neuromodulation*, *WMIC 2018*, *09/15/2018*
23. Szablowski JO, Acoustically Targeted Chemogenetics for noninvasive neuromodulation, at “*Methods and applications of ultrasound in molecular imaging and drug delivery*” workshop at *WMIC 2018, 09/12/2018,* educational talk
24. Szablowski JO, Lue B, Lee-Gosselin A, Malounda D, Shapiro MG, Acoustically Targeted Chemogenetics for noninvasive control of neural circuits, *International Society of Therapeutic Ultrasound Annual Meeting*, 05/15/2018
25. Szablowski JO, Acoustically Targeted Chemogenetics, “Neurolunch” Seminar Series, 12/12/2017
26. Szablowski JO, An HRE-binding Py-Im Polyamide Impairs Adaptation of Tumors to Hypoxia, 04/02/2015, *Center for the Chemistry of Cellular Signaling Seminar*
27. Szablowski JO, Bioengineering and Biological Engineering, 23.09.2010, 14th Science Festival in Warsaw [Educational talk for general audience]
28. Szablowski JO, Protein Engineering or how to make your own enzymes, 23.09.2010, 14th Science Festival in Warsaw [Educational talk for general audience]

**PATENTS**

1. Szablowski JO, Huang Z, *Site Specific Brain Therapeutics*, Rice Tech ID 2023-066-PZ
2. Szablowski JO, Seo JP, *"Noninvasive Site-Specific Measurement of Transgene Expression in the Brain",* Rice Tech ID: 2023-067
3. Szablowski JO, Lee S, *Noninvasive monitoring of gene expression in the brain using synthetic serum markers*, Rice Tech ID 2022-069, 05/30/2022
4. Szablowski JO, Li H, Heath JE, Shapiro MG, *Viral Vectors Engineered for Enhanced Ultrasound-Mediated Delivery to the Brain*, Serial Number: 63/225,006, Filed: 7/23/2021, CIT File Number: 8680-P
5. Szablowski JO, Shapiro MG, *Methods And Systems For Noninvasive Control Of Brain Cells And Related Vectors And Compositions*, Serial Number: 16/213,991, Filed: 12/7/2018, CIT File Number: 7921
6. Lu G, Farhadi A, Szablowski JO, Shapiro MG, *Gas Filled Structures and related compositions, methods and systems for magnetic resonance imaging*, CIT File No.: CIT-7580-P, Provisional filed: 7/28/2016, Patent application filed: 7/28/2017
7. Szablowski JO, *User-adjustable knee orthosis for patellar instability and related disorders*, CIT File No.: CIT 12-216, Provisional Filed: 8/7/2012