8/29/23

BioE Faculty Website Information Template

Please carefully read the following before beginning:

* Each lab/faculty member will have their own website and corresponding folder/info template with all of the content for the website
  + Each website will be based on the template (<https://bioetemplate.sites.northeastern.edu>) with a different URL and different content for each faculty member
* Each faculty member will be added as an administrator to their website once it’s made, **allowing them to make updates and changes to the website as desired**
* The following model info template is divided per website page
  + The name of the website page is above each table, in **bold blue.** I’ve added links to the template page to help you comprehend what information is required for that section
  + The example/description text is on the ***left*** of each table, the area to put your new content is ***on the right***
  + The example text ***will be replaced by the new content***
  + Each faculty website will have a corresponding folder where photos and linked pdfs can go. For any photos you’d like to include, please upload to the folder with the following code as the name:
    - “*name of page – the first three words of the associated paragraph or title”*
    - Example: if you want to include three photos for the research topic on the homepage, they should be named *“home – research topic 1”*
    - Example 2: if you want to include a photo of the PI, it should say “*our team – Nikolai Slavov”*

[**Home Page**](https://bioetemplate.sites.northeastern.edu/)

Block 1: A high level overview of the lab. Include a short slogan or general goal of the lab.

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| --- | --- |
| **Example Content** | **New Content** |
| *Overall goal or short slogan for lab.* | To unveil how focused ultrasound modulates the neuroimmune disease/aging environment and to develop ultrasound-based techniques for treating and monitoring neurological disorders such as glioblastoma, Alzheimer’s disease, and beyond. |
| *This is your opportunity to share what your lab or research is all about…* | The Sun Ultrasound and Neuroengineering (SUN) Lab works at the intersection of focused ultrasound (FUS), neuroimaging and immunoengineering with expertise in developing ultrasound devices, imaging methods and engineered cell systems to modulate the neuro-immune interface and their applications in immunomodulation, drug delivery, and cell-based theranostic systems. |

Block 2: Research topics, choose 1-3 to specify.

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| --- | --- |
| **Example Content** | **New Content (Broad Research Areas)** |
| *Research Topic 1* | Focused Ultrasound and Neuroimaging |
| *Research Topic 2* | Immunomodulation |
| *Research Topic 3* | Drug Delivery |

Twitter handle, if applicable: @\_taosun\_

Block 3: The “why” and broader impacts. Under “*What we do is important.”*

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| --- | --- |
| **Example Content** | **New Content** |
| *Highlight or describe clinical or therapeutic applications for your research.* |  |

Block 4: A project highlighted, if applicable.

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| **Example Content** | **New Content** |
| *Highlight one of your favorite projects (title)* |  |
| *Add a photo that visually represents your project or include a photo of your project if possible. Add a brief overview* |  |

The photo will be in the corresponding folder, labelled accordingly.

Block 5: Contact information.

|  |  |
| --- | --- |
| **Example Content** | **New Content** |
| *Add PI email* | t.sun@northeastern.edu |
| *Social media handles, if applicable* | Twitter: @\_taosun\_ |

A lab team photo for the “Contact” image will be added to the corresponding folder, labelled accordingly.

[**Research**](https://bioetemplate.sites.northeastern.edu/research/)

Block 1: Make it clear what the lab does. Under “*What We Do.”*

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| --- | --- |
| **Current Content** | **New Content** |
| *Each project outlines a topic/research focus and how you went about addressing it.* | The SUN Lab explores the application of focused ultrasound as a versatile tool for advanced imaging techniques and novel, minimally invasive therapies targeting neurological disorders. |

* *Include as much or as little information for this section as you deem necessary* (eg. there is an option to add a link to a protocol or research paper. You could include a pdf or link, or refrain entirely)
  + Feel free to add different details here than what is shown on the template, it will be based upon your unique projects
  + Any images will be included in the corresponding folder.

*Research Project 1*

|  |  |
| --- | --- |
| **Current Content** | **New Content** |
| *Research Project 1 name* | Therapeutic Ultrasound: Microbubbles and Blood Brain Barrier Cavitation |
| *Content/overview* | Therapeutic ultrasound and microbubble technology offer a groundbreaking approach to treating neurological disorders like glioblastoma and Alzheimer's by non-invasively breaching the blood-brain barrier (BBB). This method employs focused ultrasound (FUS) in conjunction with microbubbles to induce controlled cavitation, temporarily enhancing the BBB's permeability. This allows for targeted drug delivery directly to the brain, improving treatment efficacy for glioblastoma through better chemotherapeutic access, and offering potential for Alzheimer's treatment by enabling neuroprotective agents to reach the affected areas. Our research focuses on optimizing this technique to revolutionize brain disease treatment by providing a precise, controlled, and non-invasive therapy option. |

*Research Project 2*

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| **Current Content** | **New Content** |
| *Research Project 2 name* | Neuroimaging via Focused Ultrasound |
| *Content/overview* |  |

*Research Project 3*

|  |  |
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| **Current Content** | **New Content** |
| *Research Project 3 name* | Passive Cavitation Imaging |
| *Content/overview* | Develop and conduct a comprehensive investigation of various beamforming algorithms with the aim of enhancing image quality, with a particular emphasis on the robustness of the Minimum Variance Distortionless Response (MVDR) and Multiple Signal Classification (MUSIC) algorithms. |

*Research Project 4*

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| **Current Content** | **New Content** |
| *Research Project 4 name* | Focused Ultrasound Activated Micelles for Drug Delivery |
| *Content/overview* | Create polymeric micelles functionalized with click chemistry molecules to enable targeted drug delivery. These drug encapsulated micelles are triggered for activation upon exposure to focused ultrasound by virtue of an ultrasound sensitive core material, thereby ensuring precise delivery to the desired site. |

[**Publications**](https://bioetemplate.sites.northeastern.edu/publications-2/)

Block 1: Under “*Learn more about our work.*”

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| **Current Content** | **New Content** |
| *Add a Google Scholar Link* | *https://scholar.google.com/citations?user=mdinbNkAAAAJ&hl=en* |
| *Add a list of recent publications* | Sun T, Zhang Y, Power C, Alexander P, Sutton J, Aryal M, Vykhodtseva N, Miller E, McDannold N, “Closed-loop control of targeted ultrasound drug delivery across the blood-brain/tumor barriers in a rat glioma model,’’ PNAS, 114(48): E10281-E10290 (2017)  Dasgupta A#, Sun T#, Palomba R, …, McDannold N, Mitragotri S, and Lammers T, “Nonspherical ultrasound microbubbles,” PNAS, 120(13): e2218847120 (2023) (# denotes equal contributions)  Sun T#, Krishnan V#, Zhang Y, Power C, Kim J, Ravid S, Pan D, Aydin SA, Karp J, McDannold N, Mitragotri S, “Ultrasound‐mediated delivery of flexibility‐tunable polymer drug conjugates for treating glioblastoma,” Bioengineering & Translational Medicine, e10408, (2022) (# denotes equal contributions)  Sun T, Shi Q, Zhang Y, Power C, Hoesch C, Antonelli S, Schroeder M, Caldarone B, Taudte N, Schenk M, Hettmann T, Schilling S, McDannold N, Lemere C, “Focused ultrasound with anti-pGlu3 Aβ enhances efficacy in Alzheimer’s disease-like mice via recruitment of peripheral immune cells,” Journal of Controlled Release, 336: 443-456 (2021)  Sun T, Dasgupta A, Zhao Z, Nurunnabi M, Mitragotri S, “Physical triggering strategies for drug delivery,” Advanced Drug Delivery Reviews, 158: 36-62 (2020)  Sun T, Sutton J, Power C, Zhang Y, Miller E, McDannold N, “Transcranial cavitation-mediated ultrasound therapy at sub-MHz frequency via temporal interference modulation,” Applied Physics Letters, 111(16): 163701 (2017) |
| *Add list of patents, if applicable* |  |
| *Add list of articles, if applicable* |  |

[**Our Team**](https://bioetemplate.sites.northeastern.edu/our-team/)

Block 1: Include the current lab members and their titles. Each person will have a headshot as well, stored in the corresponding folder. (Image names should be something along the lines of “our team*” – the person’s name,* eg: “our team-tao sun.jpg”) Add PI bio if you want.

|  |  |
| --- | --- |
| **Name** | **Title** |
| Tao Sun  Poulami Mondal  Krunal Patel  Nathan Caso  Anthony Lin  Bailin Ren  Emma Drumm  Andrea Huang | Principal Investigator  Assistant Professor, Department of Bioengineering  PhD Student, Bioengineering  PhD Student, Bioengineering  PhD Student, Bioengineering  M.S. Student, Bioengineering  M.S. Student, Bioengineering  M.S. Student, Bioengineering & Biochemistry |

Block 2: Add just the names and titles of previous lab members, if applicable

|  |  |
| --- | --- |
| **Name** | **Title** |
|  |  |

[**Contact**](https://bioetemplate.sites.northeastern.edu/contact-us/)

Block 1: An introduction to anyone interested in contacting the lab. Provide directions for contacting, should people email the PI directly for all inquiries? Or a grad student if they have questions about joining the lab? What about collaborators?

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| --- | --- |
| **Current Content** | **New Content** |
| *Provide a welcome message.* | Welcome to the Sun Ultrasound and Neuroengineering (SUN) Lab! |
| *Before someone reaches out, provide some direction about appropriate inquiries…* |  |

A lab team photo for the “Contact” image will be added to the corresponding folder, labelled accordingly.

*Note: other information on this page will be the same as the contact section on the homepage.*