

The Scholarly and Pedagogical Benefits of the Legal Laboratory: Lessons from the Consortium for the Advanced Study of Brain Injury at Yale Law School

Zachary E. Shapiro,¹ Chaarushena Deb,² Caroline Lawrence,² Allison Rabkin Golden,² Megan S. Wright,³ Katherine L. Kraschel,² and Joseph J. Fins¹

1: CORNELL UNIVERSITY, NEW YORK, NY, USA, 2: YALE UNIVERSITY, NEW HAVEN, CT, USA, 3: UNIVERSITY PARK, PA, USA

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Abstract: In our article, we share the lessons we have learned after creating and running a successful legal laboratory over the past seven years at Yale Law School. Our legal laboratory, which focuses on the intersection of law and severe brain injury, represents a unique pedagogical model for legal academia, and is closely influenced by the biomedical laboratory.

Complicated problems require thoughtful interdisciplinary solutions. This has become evident after working for many years at the intersection of brain injury, neuroscience, medicine, and the law.¹ Developing translational approaches for the diagnosis and treatment of severe brain injury, while also addressing societal consequences of such injuries,

necessitates a research program that is highly interdisciplinary, drawing on varied expertise that can only be mustered through the collaboration of different individuals with diverse training.²

An interdisciplinary perspective is essential, as research concerning severe brain injury implicates questions that run the gamut from mathematics, biophysics, and engineering, to ethics, law, sociology, and biomedicine.³ Despite the complexity, scholarship concerning severe brain injury is vital, as this patient population has long been marked by societal and medical neglect.

Given this realization about our chosen problem space, one of us (JJF) co-established the Consortium for the Advanced Study of Brain Injury (“CASBI”) with his colleague, Nicholas D. Schiff at Weill Cornell Medical College. CASBI is a multidisciplinary consortium that studies the diagnosis and treatment of severe brain injury, mechanisms of recovery, novel therapeutics, and the ethical, legal and social implications of this work. A specific focus has been to use the law to advance disability rights for this historically underserved population.⁴

Zachary E. Shapiro, J.D., MSc., is a Senior Research Fellow and Senior Advisor at Yale Law School in New Haven, Connecticut and an Adjunct Assistant Professor of Medical Ethics Research in Medicine in the Division of Medical Ethics at Weill Cornell Medical College. **Chaarushena Deb, Caroline Lawrence, and Allison Rabkin Golden** were third-year students at Yale Law School. **Megan S. Wright, J.D., Ph.D.,** is an Assistant Professor of Law, Medicine, and Sociology at Penn State Law and the Departments of Humanities and Public Health Science at Penn State College of Medicine, as well as an affiliate faculty member with the Department of Sociology and Criminology and the Rock Ethics Institute in the College of the Liberal Arts at the Pennsylvania State University. **Katherine L. Kraschel, J.D.,** was the Executive Director of the Solomon Center for Health Law and Policy as well as a Lecturer in Law, Clinical Lecturer in Law, and Research Scholar in Law at Yale Law School. **Joseph J. Fins, M.D., D. Hum. Litt. (hc), M.A.C.P., F.R.C.P.,** is the E. William Davis, Jr. M.D. Professor of Medical Ethics and Chief of the Division of Medical Ethics at Weill Cornell Medical College, where he is a Tenured Professor of Medicine, Professor of Medical Ethics in Neurology, Professor of Medical Ethics in Rehabilitation Medicine, Professor of Health Care Policy and Research, and Professor of Medicine in Psychiatry.

As the work of CASBI continued, it became increasingly clear that any comprehensive effort to assist those recovering from severe brain injury would require a deep understanding of, and engagement with, the legal apparatus that governs daily life in the United States.⁵ It was with this understanding that, in 2014, CASBI partnered with the Solomon Center for Health Law and Policy at Yale Law School (“YLS”), to start CASBI@YLS, an interdisciplinary program under the direction of Professor Fins and Solomon Center leadership.

The traditional scholarship method employed in legal academia consists mainly of solo or single co-author writing and investigation.⁶ This model has

collaborative workflow that is quite unique amongst legal programs. While there has been a growing recognition of the benefits of studying law at its intersections with social science and humanities (e.g., law and economics or law and philosophy), multidisciplinary programs invoking a broader range of disciplines remain less common in the legal academy, limiting pedagogical options for law students who want to tackle a complex array of problems.⁹

These differences in academic approach result from a multitude of factors.¹⁰ No one can deny that there are quite differing pedagogical styles between law and medicine.¹¹ There are also different philosophical attitudes in the academies of both disciplines, with law

However, as we engaged with the academy and apparatus of law at a top law school, it became clear that legal academia more generally looked upon collaborative investigation with skepticism. Indeed, multidisciplinary academic programs, such as CASBI@YLS, are few and far between, and operated using a collaborative workflow that is quite different from traditional legal scholarship. While there has been a growing recognition of the benefits of studying law at its intersections with social science and humanities (e.g., law and economics or law and philosophy), multidisciplinary programs invoking a broader range of disciplines remain less common in the legal academy, limiting pedagogical options for law students who want to tackle a complex array of problems.

long served law well, especially in regard to some of the most complicated questions concerning individual fields of law, such as constitutional law or criminal law, which benefit from deeply focused academic consideration.

The solo or single co-author model of legal scholarship contrasts with that which predominates in academic medicine. The biomedical laboratory involves working closely with a large team, possessing diverse training and expertise, producing scholarship with many co-authors.⁷ While individual members of a lab may be exploring different projects, all of the work streams relate to a common theme and collaboration is not only rewarded, but also required.⁸

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placing more value on solitary models of scholarship and advancement, while science and medicine prioritize co-authorship and laboratory collaboration.¹² Interestingly, some argue that law not only fails to foster collaboration, but also actively discourages it, as co-authored articles generally receive less consideration from law journals and are under-valued by law school tenure committees.¹³ The result of this skepticism towards collaborative investigation is that most law articles are solo-authored.¹⁴ Unlike academic medicine and biomedical laboratories, where students and trainees work with established scholars, law’s model limits the pedagogical opportunities for law students to work collaboratively with law professors and their peers at other graduate schools.

Through our 9-year history, CASBI@YLS has been confronted with the question of what should be done when legal scholarship focuses on problems that implicate, but also transcend, the discipline of the law, such as how best to vindicate the legal rights and

promote the wellbeing of patients with severe brain injuries. CASBI@YLS has allowed us to develop a model to address such difficult problem spaces, by assembling an interdisciplinary team, not just of medical professionals, researchers, and neuroscientists, but also lawyers, law students, engineers, and social scientists. CASBI@YLS models a dynamic partnership, where law students and legal academics work closely with academic physicians, researchers, sociologists, and engineers, to address legal and social issues related to severe brain injury.¹⁶ While the work of CASBI@YLS is multifaceted, over the past 9 years, the group has produced more than 10 academic articles, with student co-authorship, which have been published in major law reviews, and medical and bioethics journals.¹⁷

While CASBI's horizons have certainly been broadened by its engagement with the Yale Law School, we write today because we realize that CASBI@YLS has also contributed to the scholarly climate at Yale. It has fostered a process for work and writing that is common at medical institutions and which could be beneficial to the legal academy more generally. We specifically advance the concept of the biomedical laboratory model for collaboration and scholarship concerning complex problems. To that end, we present CASBI@YLS as a "legal laboratory" model that shares many key similarities with biomedical laboratories in academic medicine.

In this Article, we will discuss our legal laboratory model, highlighting what we have learned over 9 years of collaboration, while teaching upwards of 40 law students. We will first describe the traditional approach legal academia has taken when considering interdisciplinary problems facing the law. We will then discuss the legal laboratory that governs our scholarship, while highlighting how this model helps us address some of the limitations of traditional legal scholarship. We will continue to highlight the advantages of the legal laboratory model, discussing how the model not only strengthens scholarship, but also results in an improved pedagogical experience for participating law students who wish to produce scholarship. Because it is our hope that CASBI@YLS can serve as a case study for a specific laboratory model that can be employed by other interdisciplinary legal programs, we will end with recommendations geared towards fostering the growth of other legal laboratories. To be as instrumental as possible with our recommendations we will highlight challenges that CASBI@YLS has faced and overcome, while offering modest suggestions to foster improved interdisciplinary collaborations in legal academia.

We believe there is an opportunity for law schools to follow CASBI@YLS's example and implement novel legal laboratories to help foster the type of pedagogy that is best suited to collaboratively write academic articles on some of the most complicated legal problems, especially when those problems demand a specialized base of technical or system knowledge and expertise.

I. Traditional Legal Pedagogy

Legal education has always had a unique academic culture, especially when contrasted with the other "priestly professions" in the United States.¹⁸ Law's traditional academic model consists of a solo-scholar, performing deep research into a topic.¹⁹ The goal of this exploration is to compose and publish legal scholarship, which can help influence and change legal practice and policy by diffusion and dissemination to policy-makers, judges, and elected officials. While some law articles have one or two co-authors, more than that is rare, although many scholars benefit from opportunities to workshop their ideas with colleagues.²⁰

To this end, an author, especially when the author is a law professor, will usually employ several law student research assistants to assist with focused research.²¹ Students can be compensated for this work with salary, class credit, or through attribution in the final manuscript, but rarely do students serve as co-authors on the final paper, and they rarely write text for the article itself. Rather, the experience serving as a research assistant and the ensuing relationship with the professor are often incentive enough for students to seek out research assistant opportunities throughout their time at law school. This contrasts with biomedical laboratories where medical and graduate students often have many opportunities to publish and co-author case reports and scientific papers with medical school faculty.

While this style of investigation has long served law well,²² one of its biggest weaknesses is its lack of ability to foster multidisciplinary and collaborative scholarship and teaching.²³ We distinguish multidisciplinary scholarship from interdisciplinary scholarship, as the latter could be within the provenance of an individual scholar with legal and PhD training or a close partnership between a legal scholar and a PhD colleague. Multidisciplinary scholarship involves a team of experts with a broader range of expertise, often creating new synergisms and scholarly outputs. This team approach leads directly to a *collaborative* model of engagement where the laboring together involves students, fellows,

and teachers operating together much like a biomedical laboratory.²⁴

For topics that inherently require multidisciplinary expertise and training, the traditional legal approach may have serious limitations.²⁵ To help address this need, there are of course many dual-degree law professors, who possess disciplinary PhDs, or other degrees, in addition to their JDs. While this does broaden the reach of scholars, as do collaborations between law scholars and co-authors from other disciplines, the model for the most part has remained solitary, or pairwise, limiting additional collaboration with many other academics with differing training.²⁶ While dual degrees are an important step towards interdisciplinary work, this may not be sufficient for certain complicated topics, which require a multidisciplinary approach.

To that end, we applaud the uptick in academic centers and other “policy labs” at law schools, which highlight the importance of interdisciplinary and multidisciplinary work.²⁷ These are moves in the right direction for law’s investigation into complex problem spaces.²⁸

II. The Legal Laboratory

Law’s work process contrasts with the biomedical laboratory model, widespread in the medical and scientific academies. In a biomedical laboratory, a team of researchers works on a research agenda set principally by the senior investigator, the head of the laboratory. Individual researchers may work on their own research that supports the overall focus of the lab, or collaborate to tackle unique problems facing the workgroup. Throughout, while individual academic freedom is supported, every researcher’s work functions to support the team, which is often funded by large grants that support a lab and its members.²⁹

While academic offerings terming themselves “legal laboratories” exist at other law schools, they take a different approach and focus than our effort at CASBI@YLS. These law labs similarly honor the model of multidisciplinary teamwork to address complex problems, yet do so in ways that are quite different from our work at YLS. For instance, there is a legal laboratory designed to foster lawyering opportunities at the University of Michigan Law School called the Transactional Lab & Clinic. The Michigan program blends classroom instruction, focused small group exploration, and practice simulation, as well as live-client experience, to offer unique pedagogical and practical opportunities for law students. At Columbia Law School, there are several different policy labs offered to students who seek to collaborate “. . . with profession-

als and stakeholders from many different disciplines and communities and to link traditional lawyering skills with other forms of knowledge and expertise.”³⁰

These are just two examples of programs at law schools that we consider variations of a “legal laboratory.” However, while these laboratories do outstanding and often important work, they do not generally focus on producing high quality scholarship for publication in academic journals in law, medicine and public policy. Rather, these labs focus on the practice of lawyering, or producing freestanding white papers or other tailored work products (for example, specific games or websites) designed to address a particular problem that has a legal dimension.

CASBI@YLS’s focus on interacting primarily with the broader academic community in medicine, bioethics and the law, and using the apparatus of legal scholarship to offer multidisciplinary ideas and solutions for individuals with brain injuries, makes our effort distinct within the aforementioned landscape. So too does our focus on utilizing teams of faculty, fellows and students to co-author our scholarly products. Another important distinction is how closely CASBI@YLS focuses on taking our cues from the work flow and culture of biomedical developments and the work of affiliated scientists.

Indeed, our legal laboratory has been designed to work in quite a similar fashion to a biomedical one. There is a focused and sustained agenda of inquiry for the laboratory as set by the senior researcher. But instead of conducting experiments, we conduct longitudinal legal research that builds on earlier work and hypothesis generation.

While legal laboratories have been written about in the past,³¹ the actual practice and function of one has generally been underexplored in legal pedagogical scholarship. In many ways, our legal laboratory is distinguished from a legal clinic (as well as other programs described as legal laboratories), because our legal lab focuses on producing academic scholarship and follows closely the model of a biomedical laboratory, given CASBI’s physician leadership. To amplify the possible benefits of the legal lab concept, we will highlight how CASBI@YLS functions, starting with its history.

A. CASBI@YLS: A Case History

CASBI@YLS is a law school program that employs the biomedical laboratory model of work, to focus exclusively on the problem space of law, ethics, and brain injury. CASBI began in 2006 at Weill Cornell Medical College and Rockefeller University. It originally grew out of the collaboration between Dr. Joseph J. Fins,

a physician and medical ethicist, and Dr. Nicholas D. Schiff, a neurologist, both colleagues at Weill Cornell Medical College.³² From the outset CASBI blended a medical focus with broader normative and legal concerns about patients and human subjects with severe brain injury. The program began at Weill Cornell Medical College and expanded to include The Rockefeller University and the Rockefeller University Hospital.³³

While the problem space of severe brain injury had clear implications for fields such as experimental neurophysiology and clinical neurology, Dr. Fins became increasingly concerned about the legal and ethical dimensions of medical care as it related to this population.³⁴ As there was a substantive need to address growing legal problems faced by individuals with brain injuries,³⁵ Dr. Fins started CASBI@YLS through a partnership with Professor Abbe Gluck, Alfred M. Rankin Professor of Law and Faculty Director of The Solomon Center for Health Law and Policy at Yale Law School. Dr. Fins and Professor Gluck conceptualized CASBI@YLS while he was the Dwight H. Terry Visiting Scholar in Bioethics at Yale University while on sabbatical from Weill Cornell Medical College.³⁶

Because CASBI@YLS's workflow is based on the biomedical laboratory model, we call this system a legal laboratory. In writing about severe brain injury and the law, CASBI@YLS has addressed problems that require an intimate knowledge of the latest state of brain science,³⁷ medical understanding of recovery, rehabilitation, and emerging treatment for this population, an understanding of the engineering and biophysics of neuroprosthetics like brain-computer implants,³⁸ as well as familiarity with the legal issues ranging from Medicare reimbursement to *Olmstead* claims under the Americans with Disabilities Act of 1990, to questions of constitutional and civil law.³⁹ These questions are supplemented by input from the social sciences, considering disability critiques of existing policies and by drawing on sociology to recognize and address problematic areas.⁴⁰

B. CASBI@YLS: A Model Legal Laboratory

B.1 Methods

In our legal laboratory, the senior medical researcher is Dr. Fins, a tenured faculty member at Weill Cornell Medical College and now a visiting professor at Yale Law School, who works in close collaboration with the Faculty Director of the Solomon Center for Health Law and Policy, other center staff, as well as a senior fellow. The senior fellow is a law school graduate, early in their career, possessing strong academic credentials, with a deep interest in scholarship, brain injury,

social science, and bioethics. The senior researcher sets CASBI@YLS's specific theme, usually a focused topic at the intersection of brain injury, ethics, and law, in effect setting the short-term research agenda for the laboratory as part of a longitudinal approach to inquiry. This short-term agenda, like in a biomedical laboratory, advances the long-standing mission of the lab, and, just like science builds upon previous discoveries, so too does CASBI@YLS's legal scholarship move forward the work undertaken and published in previous years with prior groups of students.

The senior researcher, senior fellow and Center staff are responsible for helping to recruit law students to join CASBI@YLS through a course offering. Students enroll and receive credits for participating, which count towards their overall graduation requirement. Credits emphasize the institutional value placed on the work of the legal laboratory, and highlight the pedagogical contribution of this approach to the formation of legal scholarship, while ensuring that students are able to devote appropriate focus and time to this important work.

At YLS, student recruiting is also facilitated by The Solomon Center for Health Law and Policy. The Solomon Center is the home of health law and related fields at YLS.⁴¹ The Center brings together practitioners and leading experts to tackle difficult questions concerning health law and policy, focusing on the intersection of law and the health care system.⁴² At YLS, the Center serves as an academic hub for professors, fellows, and students who are interested in the intersection of law and science, medicine, and healthcare, and allows CASBI@YLS to recruit student researchers who have particular interest in the problem space of law, neuroscience, and disability and civil rights.

Over the years, CASBI@YLS has developed a work template that allows each group of students, fellows, Center Directors, and professors to collaborate constructively and produce high-quality legal scholarship. Once a topic has been chosen, Dr. Fins and the senior fellow work to refine the theme and develop an idea for a focused, publishable academic paper on an important topic concerning severe brain injury and the law. Each fall, a new group of students joins CASBI@YLS and are integrated into an ongoing project, or begin the work of starting a new academic paper. Every semester starts with an introductory lecture by Dr. Fins, who provides background on the field of brain injury and disability rights. This lecture also serves the purpose of situating the upcoming work of the semester into the history and trajectory of the laboratory itself, highlighting how our next project will build upon previous scholarship, all with an eye

towards vindicating the rights of those with severe brain injury. After this lecture, the group will meet as a whole to ask questions and discuss the topic.

The team then outlines the paper, identifying components of the legal argument and charting sections for an eventual group law review submission. Along the way, care is taken to be sure there is a concrete thesis and research agenda. This helps the leadership team develop specific assignable work streams to student scholars who will independently pursue their own subsidiary areas of research. This division of labor enables different members of the legal laboratory to concurrently contribute to the final product, which generally takes the form of academic legal scholarship. Once assigned, students perform extensive research, and create an even more detailed and focused outline of their own topic, which provides the scaffolding for their future writing. These components of work eventually become sections of the group paper.

After receiving feedback from the senior fellow, students make a presentation of their research to the entire legal lab. This allows the whole group to offer suggestions on the research, while ensuring that every individual has an appreciable understanding, not only of their own topic, but also of the overarching theme and direction of the research. Crucially, by engaging with each other's research at multiple intervals, students are able to understand how their work fits in with the efforts of their peers. This enables students to pursue individual work on a topic that is particularly interesting to them, while giving them a sense of teamwork and responsibility to each other that can often be missing when engaging in solo-authored legal research and writing. In this way, the students and leaders have a scholarly dependency on each other that is quite similar to a biomedical research laboratory.

With feedback from their student colleagues and mentoring from the senior researcher and fellow, students then convert their research into more formal academic legal writing. These individual papers, which can range from 4000 to more than 8000 words, eventually inform sections of the group paper.

After this initial drafting, faculty and the senior fellow give detailed edits and feedback, while the rest of the students read their peers' work and offer additional edits and suggestions. This feedback is shared via group meetings, further allowing individuals to engage with others' scholarship and understand how to improve their papers. Crucially, by reading other papers, students grasp how each piece fits into the overall group effort. This feedback is then incorporated into another set of revisions.

After more revising, every student's work is sent to the senior leadership team, which begins the laborious task of editing, synthesizing, and compiling the multiple different papers into one (or two) cohesive law review journal articles. This work is the responsibility of the senior legal fellow and Dr. Fins, and ranges from creating transitions, to harmonizing the writing style, to wholesale rewriting and restructuring, so that the work and voices of multiple authors coalesce into a cohesive single paper. The senior fellow, assisted by Dr. Fins, will also write multiple sections of the paper *de novo*, as we only assign a small portion of the necessary writing to the students. This helps ensure that the vast majority of the work and the final writing will be performed by the senior legal fellow, who often serves as the first author of the final manuscript.

Once there is a cohesive master paper, this single paper will go through additional rounds of edits by the professor and fellow. This is arduous work, and it is not uncommon for papers to go through many drafts, as the team musters its expertise to refine and improve the manuscript. After many rounds of edits, the leadership team is left with a single academic manuscript, representing the work not only of the students and the senior fellow, but also of the entire CASBI@YLS team.

Eventually this manuscript is presented back to the students, who, over the course of another semester, take time to painstakingly read, engage with, and edit the final product. Depending on need, individual students may work further on expanding their research, editing each other's sections, bluebooking parts of the paper, or undertaking other tasks. Based on this engagement and feedback, the paper will go through multiple iterations again, due to the extensive editing throughout this process. After each revision, every student is expected to read and edit the new product. At the end, the group is left with one paper, which, while authored by multiple individuals, reads cohesively and coherently, with one united voice, representing the efforts of the entire team of authors.

Ultimately, every team member who has contributed actual writing work represented in the final paper, in addition to editing and engagement with other sections, gets the opportunity to serve as a co-author on the paper. The fellow will generally be the first author, with Dr. Fins serving as the last-named author, a designation of senior status in most biomedical publications. On occasion a student has been a first author.⁴³ This paper will then be submitted to law reviews or biomedical journals via the traditional submission process.

B2. Results

Our legal laboratory has found tremendous success with this model. As a group, we have published high quality scholarship in multiple law reviews ranked in the top 50 of their field. We have been able to publish articles, most with student co-authors, in journals such as the *Boston College Law Review*, the *Indiana Law Journal*, *North Carolina Law Review*, the *Tulane Law Review*, the *Harvard Journal of Law and Technology*, the *Journal of Law, Medicine, and Ethics*, the *Stanford Technology Law Review*, the *Yale Journal of Health Policy, Law, and Ethics*, and the *Florida State University Law Review*.⁴⁴ For some of these law reviews, our articles were the first ones published where a student from another law school served as a full author.

These articles have made important contributions to the scholarship and discourse concerning severe brain injury and the law, advancing the work of vindicating the rights of patients with brain injuries, which Dr. Fins first articulated with his book, *Rights Come to Mind*.⁴⁵ CASBI@YLS began by writing about how the improvement standard for rehabilitation reimbursement may unfairly discriminate against those with severe brain injury,⁴⁶ and why those with brain injuries might have a legal right to demand rehabilitation services, so that they can be reintegrated back into their communities.⁴⁷ Next, CASBI@YLS built upon this legal foundation, and investigated federal, state, and international human rights law, along with the Americans with Disabilities Act (“ADA”), in order to advocate for and protect the rights of individuals with severe brain injury.⁴⁸ Along the way, CASBI@YLS produced scholarship to help evaluate the success of neuropsychiatric devices for treatment of disorders of consciousness,⁴⁹ expand the growth of generic medical devices,⁵⁰ and discuss ethical, medical, and legal issues related to brain computer interfaces, which will one day be used by those with brain injury to help communication.⁵¹ Over the past two years, we built upon our previous arguments concerning the ADA, and conducted an in-depth exploration of how *Olmstead* enforcement actions can be mustered in order to demand services for this population.⁵²

Each paper and project forwards a different aspect of CASBI@YLS’s mission to advance the rights of those with brain injuries, just like a biomedical laboratory builds upon previous experiments and scholarship. In this way, the legal laboratory has a concrete mission and agenda, and every “experiment,” which takes the form of legal research and scholarship, advances the overall lab agenda, while building the foundation for

future projects. In this way, the legal laboratory has a translational goal, aimed at turning scholarly research and academic papers into legal activism that improves the lives of those with severe brain injury.

III. Advantages of the Legal Laboratory

CASBI@YLS’s legal laboratory is a model of academic scholarship that could be catalytic in various settings. Other legal laboratories could begin to address complicated legal challenges and help foster the multidisciplinary problem solving that is needed to address fields of law which demand a specialized base of knowledge and expertise. Legal laboratories represent a path forward to address some of the major problems facing interdisciplinary scholarship in legal academia, as they address some of the key shortcomings in law’s traditional method of solitary scholarly investigation.

Our legal laboratory has resulted in an improvement to the quality and depth of analysis. This is particularly noticeable for the complex topics which exist across multiple disciplinary platforms, and implicate specialized scientific or biomedical knowledge. With some exceptions,⁵³ it is unrealistic to expect one individual to have the requisite medical and scientific understanding, legal expertise, and grounding in the sciences or social sciences to address such complicated (and rich) topics as a solo-scholar. However, this inquiry becomes possible by building a diverse team and engaging with students with different backgrounds.

Our legal laboratory has been able to recruit students with a variety of intellectual interests and talents, fostering the ability of these students to work together as a cohesive team. Over our first 9 years, CASBI@YLS has included law students with PhDs in humanities, social sciences, and biomedical engineering; extensive medical expertise; deep groundings in disability advocacy; significant legal writing experience; and experience working in biomedical laboratories. Student diversity is a key strength of the legal laboratory model, as it allows the students to contribute different aspects to the final work product, while also offering something to their team-members, who might not be exposed to their colleagues’ expertise in other academic settings.

Legal laboratory collaboration results in improved quality of scholarship about complex topics, especially relating to the sciences. This is not just a speculation based on our experience, as independent study has shown that interdisciplinary legal research produces the best content concerning complex fields.⁵⁴ Indeed, in the science context, team research is on average more frequently cited than individual scholarship, and research has shown that academic teams are more

likely than individuals to produce exceptionally high impact publications.⁵⁵ The legal field should move toward the same conclusions, at least in complex multidisciplinary fields.

Beyond enhancing scholarship, the legal laboratory model brings important pedagogical advantages that could widely benefit law student education, whether or not they pursue an academic career. Crucially, law students in a legal laboratory obtain significant writing and editing experience, as they get to be a part of a diverse academic team, employing a laboratory model, a widespread mechanism for collaborative writing and research.⁵⁶ In the legal laboratory, students are

cator's dream, as it truly allows students to enjoy the experience of working together, while producing high quality, interdisciplinary, legal scholarship. We have witnessed this firsthand, as CASBI@YLS often works with students for multiple years, allowing novice students to eventually become the mentors and leaders of the next group of CASBI@YLS student scholars.

With respect to their academic formation, legal lab students get a more holistic work experience engaging with a co-authored paper than that offered through traditional research assistant opportunities. Our students get to work on a manuscript from start to finish and gain an appreciation of every stage of

In sum, the legal laboratory model is replete with genuine pedagogical and personal benefits for our students. The teaching experience enriches the student experience, because they have the opportunity to learn from the entire team, and eventually become full authors on a final paper. These are benefits that could be realized by other law schools equally committed to interdisciplinary scholarship and novel pedagogy.

exposed to peers with different backgrounds, training, and expertise, allowing them to learn from each other, while fostering a uniquely supportive, collaborative, and congenial atmosphere. A further benefit (one that extends throughout coursework at Yale) is that students mix from different class years, allowing more experienced second and third year law students to mentor and form relationships with more junior students.⁵⁷

Student engagement in our legal lab has transcended the confines of the law school. While the vast majority of students have been from YLS, we have also hosted Yale School of Medicine and public health students on our team, benefiting the broader university community. They have strengthened the interdisciplinary nature of our work and have created another unique opportunity for cross-disciplinary collaboration, as law students rarely get the chance to work so directly with students from other disciplines. The interaction of law students with their medical peers presents excellent opportunities for learning and growth, fostering cross-discipline collaboration and thought. In the past, we have also invited exceptional Yale undergraduates to join us.

With such diverse membership, the legal lab promotes a sense of teamwork and responsibility, both to the overall project, and their lab-mates. This collegial atmosphere and high level of engagement is an edu-

the editorial process enroute to producing high quality scholarship.

In addition, the process also serves as an excellent way to get significant legal writing, editing and bluebooking experience, skills that are useful in legal academia and beyond.⁵⁸ Indeed, the collaborative writing model employed by legal laboratories should be helpful for many of the jobs that the average law student considers. In our legal laboratory, CASBI@YLS students gain new skills, while refining their writing process, which improves their writing for the rest of their legal careers.

Students also realize the concrete benefit of being recognized as full authors of a published manuscript. Authorship is much more valuable to a prospective academic's *curriculum vitae* than simple acknowledgement.⁵⁹ The prospect of authorship on a law review publication is a powerful incentive for our students and helps promote engagement over multiple years. This model of authorship is much more similar to the biomedical laboratory, where papers are often co-authored by many members of the lab, who each receive attribution as full co-authors.⁶⁰

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authors on a final paper. These are benefits that could be realized by other law schools equally committed to interdisciplinary scholarship and novel pedagogy.⁶¹

IV. Challenges

While we believe that the legal laboratory model, exemplified by CASBI@YLS, could benefit other law schools, we have encountered challenges that should be addressed in order to foster broader adoption of this pedagogical model.

We needed to overcome several logistical challenges to set up CASBI@YLS. We were helped by the fact that the Solomon Center was a natural conceptual fit. Through this relationship with established faculty, CASBI@YLS was able to offer law students credit and provide visibility and legitimacy to the program. Early support from the Terry Scholarship for Dr. Fins provided funding during a sabbatical and additional extramural funding has helped to sustain involvement, although we acknowledge that this is a labor-intensive model.

We have also run into barriers that other nascent programs might encounter. A major challenge has been an editorial bias against law review articles that have multiple authors, some of whom are students. In fact, many of the best law journals in the country have a stated policy that they will not publish the work of student authors from other law schools.⁶² While we respect and understand these policies, which serve as a mechanism to ensure that students can publish notes and scholarship in the law review of the school they attend, we would urge a liberalization of this policy that would allow publication of articles that are co-written by students from other law schools.

Policies banning student authors are normatively problematic. They create a powerful incentive for professors to omit worthy students as co-authors. This results in a situation where students may not receive proper credit as authors, even when their contributions would merit that recognition. Such exclusion would be anathema in a scientific publishing context as it defies the consortium agreement of the International Committee of Medical Journal Editors.⁶³ Similar norms should inform legal scholarship consistent with the publishing exigencies of law schools and their eponymous journals.

With these constraints in mind, we suggest that student authorship guidelines be revisited. For instance, law reviews could prospectively slot one article per year, or volume, to students from their own institution, but still be receptive to articles co-authored by students from other schools. Alternatively, the student note processes could be expanded or reserved exclu-

sively for local students, as many leading law reviews already do. This would help ensure that home institution students are not unfairly disadvantaged. While these are just a few options, the core of our call is to eliminate categorical bans on student co-authorship. They make little academic sense and create editorial barriers to collaborative scholarship limiting genuine academic and pedagogical benefit.

Even before these editorial reforms are in place, we also believe that law school faculty need to better appreciate the value of multidisciplinary scholarship and give appropriate credit for such projects.⁶⁴ Regrettably law school hiring and tenure committees often discount co-authored work products and the pedagogical skills that make this kind of writing possible.⁶⁵ For example, CASBI@YLS legal fellows get significant professional experience that might suggest their suitability for subsequent tenure track jobs. They help instruct students with their academic legal writing, develop classroom management skills, and steward students into a cohesive team. They also develop editing and writing skills that they can bring with them into their future collaborations as prospective faculty members.⁶⁶

V. Conclusion

C.P. Snow famously wrote of the two culture problem dividing the sciences and the humanities.⁶⁷ A similar problem currently affects legal pedagogy, which has made great strides in recent years but needs to embrace more interdisciplinary cross-talk to tackle the most complex problems in law and society. Indeed, to invoke Snow's framework, it could be said that the most pressing — and interesting questions — implicate more than a single culture.⁶⁸ And these problems are best tackled by those working to bridge these two cultures, with scholarship that draws on interdisciplinary expertise.

Nowhere is this more true than in legal scholarship at the intersection of science, medicine, and law. This type of scholarship is far from theoretical. It has significant impact on legal practice, regulation, and legislation; impact that can translate into concrete changes in both society and the practice of medicine.⁶⁹ Indeed, because law governs many domains of life and practice, certain areas of law, which inherently cross the disciplines, demand a deep understanding and engagement with other intellectual fields. Only by drawing on multidisciplinary experience can challenges be addressed holistically and the best possible solutions envisioned and then devised. This makes collaboration between the law and other disciplines a pressing academic and social imperative, and we

applaud other policy centers, legal laboratories, and efforts, such as Yale Law's Medical-Legal Partnership and Fordham Law School's Clinic on Presidential Succession that work towards this goal, even as they do so in ways that are distinguished from our efforts at CASBI@YLS. We also applaud and certainly do not discount the growing number of writing collaborations between faculty in law and medicine, including colleagues at Yale.⁷⁰

The legal laboratory model offers one possible method to pursue our goal. While we have focused our legal laboratory on the intersection of brain injury and the law, CASBI@YLS is but one example of a model that can be widely disseminated in the service of solving complicated problems, such as those related to law and economics, law and philosophy, criminal law, patent law, environmental law, and other intersectional topics. It is our hope that other legal academics will view the legal laboratory as a vehicle for multidisciplinary pedagogy and investigation for the public good.

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References

- See generally J. J. Fins, *Rights Come to Mind: Brain Injury, Ethics, and the Struggle for Consciousness*. (New York: Cambridge University Press, 2015), [henceforth RCTM].
- See generally *id.*
- Id.*
- See "Weill Cornell Medicine," Consortium for the Advanced Study of Brain Injury, *available at* <<https://casbi.weill.cornell.edu/>> (last visited September 11, 2023).
- Id.*
- See B. P. Edwards, "Co-Authoring & Essays in the Legal Academy," *Prawfsblawg*, *available at* <<https://prawfsblawg.blogs.com/prawfsblawg/2016/08/co-authoring-essays-in-the-legal-academy.html>> (last visited September 11, 2023).
- See E. Hitt, "Lab is Where the Heart Is? Trials and Tribulations of Lab Culture," *Science Advertising Feature*, *available at* <<https://www.sciencemag.org/features/2012/02/lab-where-heart-trials-and-tribulations-lab-culture>> (last visited September 11, 2023).
- See also L. Williams, *Developing Lab Culture: The Science of Support*, *Quartzly*, *available at* <<https://blog.quartzly.com/2016/12/14/developing-lab-culture>> (last visited September 11, 2023).
- See D. W. Vick, "Interdisciplinarity and the Discipline of Law," *Journal of Law and Society* 31, no. 163 (2004): 1-6, 2-4.
- See M. Heins, S. N. Fahey and R. C. Henderson, "Law Students and Medical Students: A Comparison of Perceived Stress," *Journal of Legal Education* 33, no. 3 (1983): 511-525.
- See generally R. Cramton, "Lessons for Medicine from Legal Education," *Health Affairs*, *available at* <<https://www.healthaffairs.org/doi/full/10.1377/hlthaff.5.3.34>> (last visited September 11, 2023).
- See T. Ginsburg and T. J. Miles, "Empiricism and the Rising Incidence of Coauthorship in Law," *Illinois Law Review* 5 (2011): 1785-1788.
- See E. Devine, "Co-authorship in the Humanities and Social Sciences: A Global View," Taylor & Francis White Papers, *available at* <<https://authorservices.taylorandfrancis.com/wp-content/uploads/2017/09/Coauthorship-white-paper.pdf>> (last visited September 11, 2023).
- See *id.*
- See, e.g., Vick, *supra* note 9.
- See e.g., M. S. Wright, et al., "When Biomarkers Are Not Enough: FDA Evaluation of Effectiveness of Neuropsychiatric Devices for Disorders of Consciousness," *Stanford Technology Law Review* 21, no. 2 (2018), 276; see also Z. E. Shapiro, et al., "Nothing Generic About It: Promoting Therapeutic Access by Overcoming Regulatory and Legal Barriers to a Robust Generic Medical Device Market," *North Carolina Law Review* 98, no. 3 (2020): 595-630.
- See e.g., M. S. Wright, et al., "Disorders of Consciousness, Agency, and Healthcare Decision-Making: Lessons from a Developmental Model," *AJOB Neuroscience* 9, no. 1 (2018): 55-64; M. S. Wright, M. R. Ulrich, and J. J. Fins, "Guardianship and Clinical Research Participation: The Case of Wards with Disorders of Consciousness," *Kennedy Institute of Ethics Journal* 27, no. 1 (2017): 43-70.
- See J. S. Edwards, "On the Use, Misuse, and Abuse of the Words 'Profession' and 'Professional,'" *Some Grey Matter*, *available at* <<https://www.somegreymatter.com/professional.html>> (last visited September 11, 2023); see also J. J. Fins and F. G. D., "Entrevista a Albert R. Jonsen," *Eidon* 44 (2016): 67-86.
- See Ginsburg and Miles, *supra* note 12.
- See generally Devine, *supra* note 13.
- See Ginsburg and Miles, *supra* note 12.
- See *id.*
- See Vick, *supra* note 9; see also L. Kramer, "Creating Interdisciplinary Education," *Stanford Lawyer Magazine* 71 (2005), *available at* <<https://law.stanford.edu/stanford-lawyer/articles/creating-interdisciplinary-education/>> (last visited September 11, 2023).
- See N. H. Buchanan, "Why Interdisciplinary Legal Scholarship Is Good for the Law, the Academy, and Society at Large," *Verdict*, *available at* <<https://verdict.justia.com/2012/01/19/why-interdisciplinary-legal-scholarship-is-good-for-the-law-the-academy-and-society-at-large>> (last visited September 11, 2023).
- See *id.*
- Id.*
- See, e.g., Policy Labs, Columbia Law School, *available at* <<https://www.law.columbia.edu/academics/experiential/policy-labs>> (last visited September 11, 2023).
- See generally M. F. Davis, "Institutionalizing Legal Innovation: The (Re)Emergence of the Law Lab," *Journal of Legal Education* 65, no. 1 (2015): 290-206.
- It is important to note that in traditional biomedical labs there is a need to obtain extramural funding to support the infrastructure necessary for research and to provide support for time and effort of investigators. This contrasts with the tuition model in traditional academe and law schools.
- See "Transactional Lab & Clinic," Clinical Programs at University of Michigan Law School, *available at* <<http://www.law.umich.edu/clinical/tlc/Pages/default.aspx>> (last visited September 11, 2023); see also <<https://www.law.columbia.edu/academics/experiential/policy-labs>> (last visited September 11, 2023).
- See Davis, *supra* note 28.

32. See History, Evolution, and Timeline of CASBI, Consortium for the Advanced Study of Brain Injury, *available at* <<https://casbi.weill.cornell.edu/about-us/history-evolution-timeline>> (last visited September 11, 2023).
33. See generally *id.*
34. *Id.*
35. *Id.*
36. See “About Us,” Solomon Center for Health Law & Policy at Yale Law School, *available at* <<https://law.yale.edu/solomon-center/about-us>> (last visited September 11, 2023).
37. See generally Davis, *supra* note 28.
38. See C. Lawrence, Z.E. Shapiro, and J. J. Fins, “Brain-Computer Interfaces and the Right to Be Heard: Calibrating Legal and Clinical Norms in Pursuit of the Patient’s Voice,” *Harvard Journal of Law and Technology* 33, no. 1 (2019): 167-202.
39. See M. S. Wright, et al., “Severe Brain Injury, Disability, and the Law: Achieving Justice for a Marginalized Population,” *Florida State University Law Review* 45, no. 2 (2018): 313-382.
40. See generally *id.* See also Solomon Center, *supra* note 36.
41. *Id.*
42. *Id.*
43. See C. Lawrence, Z.E. Shapiro, and J. J. Fins, *supra* note 38.
44. See e.g., Z. E. Shapiro, *supra* note 16; Z. E. Shapiro and J. J. Fins, “Pain Management, Disorders of Consciousness, and Tort Law: An Emergent Tort to Fix a Longstanding Injustice” *Indiana Law Journal* 98 (2023): 693; C. Lawrence, Z.E. Shapiro, and J. J. Fins, *supra* note 38; J. J. Fins et. al., “Whither the ‘Improvement Standard’? Coverage for Severe Brain Injury after *Jimmo v. Sebelius*,” *Journal of Law Medicine & Ethics* 44, no. 1 (2016): 182-93; see also Wright et al., *supra* note 16; M. S. Wright and J. J. Fins, “Rehabilitation, Education, and the Integration of Individuals with Severe Brain Injury into Civil Society: Towards an Expanded Rights Agenda in Response to New Insights from Translational Neuroethics and Neuroscience,” *Yale Journal of Health Policy, Law, and Ethics* 16 (2016); M. S. Wright, et al., *supra* note 39; Z. E. Shapiro, et al., “Designing an Americans with Abilities Act: Consciousness, Capabilities, and Civil Rights,” *Boston College Law Review* 63, no. 5 (2022): 1729-1796.
45. RCTM, *supra* note 1.
46. See Fins et al., *supra* note 44.
47. See Wright and Fins, *supra* note 44.
48. See Wright et al., *supra* note 39.
49. See Wright et al., *supra* note 16.
50. See C. Lawrence, Z.E. Shapiro, and J. J. Fins, *supra* note 38.
51. See Shapiro, et al., *supra* note 16.
52. Z. E. Shapiro, et al., “Olmstead Enforcements for Moderate to Severe Brain Injury: The Pursuit of Civil Rights Through the Application of Law, Neuroscience, and Ethics,” *Tulane Law Review* 95, no. 3 (2021): 525-600.
53. See generally RCTM, *supra* note 1.
54. See C. Cotropia and L. Petherbridge, “The Dominance of Teams in the Production of Legal Knowledge,” *Yale Law Journal Forum* 124, no. 124 (2014): 18-29.
55. See T. Ginsburg and T. J. Miles, “Empiricism and the Rising Incidence of Coauthorship in Law,” *University of Illinois Law Review* 2011 (2011): 1785-1837.
56. V. M. Patel, et. al., “Collaborative Patterns, Authorship Practices and Scientific Success in Biomedical Research: A Network Analysis,” *Journal of The Royal Society of Medicine* 112, no. 6 (2019): 245-257.
57. See generally C. E. Zuckerman, “Mentoring Matters: Teaching Law Students the Value of the Mentoring Relationship,” *Perspectives: Teaching Legal Research and Writing* 20 (2012): 126-28.
58. I. Kowarski, “Choose a Law School That Emphasizes Legal Writing,” *U.S. News & World Report*, *available at* <<https://www.usnews.com/education/best-graduate-schools/top-law-schools/articles/2017-11-02/assess-the-quality-of-a-law-schools-legal-writing-program>> (last visited September 11, 2023).
59. See International Committee of Medical Journal Editors, Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals, International Committee of Medical Journal Editors, *available at* <<http://www.icmje.org/icmje-recommendations.pdf>> (last visited September 11, 2023). The International Committee of Medical Journal Editors (“ICJME”), for instance, recommends that authorship be based on the following four criteria: “1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; 2. Drafting the work or revising it critically for important intellectual content; 3. Final approval of the version to be published; 4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.” In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work. In addition, authors should have confidence in the integrity of the contributions of their co-authors. All those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors.
60. See V. Venkatraman, “Conventions of Scientific Authorship,” *Science*, *available at* <<https://www.sciencemag.org/careers/2010/04/conventions-scientific-authorship>> (last visited September 11, 2023).
61. R. Craig and T. Markowitz, “College Silos Must Die For Students to Thrive,” *Forbes*, *available at* <<https://www.forbes.com/sites/ryanecraig/2017/04/14/college-silos-must-die-for-students-to-thrive/#3b7c3da8222d>> (last visited September 11, 2023).
62. See e.g., *Harvard Law Review*, About, *available at* <<https://harvardlawreview.org/about/>> (last visited September 11, 2023) (describing the process by which second and third years student author unsigned pieces), *Stanford Law Review*, Note Submissions, *available at* <<https://www.stanfordlawreview.org/submissions/notes-article/>> (last visited September 11, 2023) (only accepting notes from current or recent Stanford Law graduates); *Texas Law Review*, Submissions, *available at* <<https://texaslawreview.org/submissions/>> (last visited September 11, 2023) (only accepting student notes from members of the University of Texas School of Law); *Minnesota Law Review*, Submissions, *available at* <<https://minnesotalawreview.org/submissions/#:~:text=The%20Minnesota%20Law%20Review%20does%20not%20accept%20submissions%20from%20law%20students>> (last visited September 11, 2023) (specifically highlighting the fact that it does not accept submissions from law students).
63. Defining the roles of authors and contributors, ICMJE, *available at* <<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>> (last visited September 11, 2023).
64. L. Yamane, “Bias in the Academy: Counting Co-Authors,” *Inside Higher Ed.*, *available at* <<https://www.insidehighered.com/views/2019/12/12/academe-must-properly-credit-work-co-authored-publications-opinion>> (last visited September 11, 2023); O. B. Arewa, A. P. Morriss and W. D. Henderson, “Enduring Hierarchies in American Legal Education,” *Indiana Law Journal* 89 (2014): 941, 942-949.
65. *Id.*
66. See generally H. E. Katz and K. F. O’Neil, “Strategies and Techniques of Law School Teaching A Primer for New (and Not So New) Professors,” *Walters Kluwer Law & Business*, *available at* <https://www.wklegaledu.com/File%20Library/Resources/Faculty/Strategies-Techniques-Teaching/KatzandONeill_LawSchoolTeaching.pdf> (last visited September 11, 2023).

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67. C.P. Snow, *The Two Cultures And The Scientific Revolution* (1959); L. M. Krauss, "An Update on C.P. Snow's "Two Cultures,"" *Scientific American*, available at <<https://www.scientificamerican.com/article/an-update-on-cp-snows-two-cultures/>> (last visited September 11, 2023).
68. J. J. Fins and I. Melo-Martin, "C.P. Snow's "Two Cultures" Fifty Years Later: An Enduring Problem with an Elusive Solution," *Technology in Society* 32, no. 1 (2010): 1-4; J. J. Fins, "C.P. Snow at Wesleyan: Liberal Learning and the Origins of the "Third Culture,"" *Technology in Society* 32, no. 1 (2010): 10-17.
69. See generally Z. E. Shapiro, "Bioethics in the Law," *Hastings Center Report* 47, no. 1 (2017): 1.
70. Medical-Legal Partnerships, Yale Law School, available at <<https://law.yale.edu/solomon-center/projects-publications/medical-legal-partnerships>> (last visited September 11, 2023); J.J. Fins and C. Albert, "Bipartisanship, and Presidential Succession: Lessons from Watergate," *Fordham Law Review* 91, no. 13 (2022): 59-64; see also <<https://www.businesswire.com/news/home/20180323005532/en/Fordham-Law-Clinic-Highlights-Major-Gaps-in-Presidential-Succession-Plans>> (last visited September 11, 2023).
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