



Overview of D-SIGN

[Duke Support for Interdisciplinary Graduate Networks \(D-SIGN\)](#) fosters intellectual communities among graduate students from across Duke's schools. This internal funding mechanism encourages students to explore beyond disciplinary lines, both in research and coursework.

By enabling graduate students to build or extend their networks and to integrate collaborative, cross-school experiences into their programs, this program increases the number of individuals whose graduate training reflects Duke's commitment to interdisciplinarity and knowledge in the service of society. Such experiences deepen our students' exposure to interdisciplinary collaboration, key preparation for both academic positions and nonacademic career trajectories.

D-SIGN grants are available to graduate student groups to propose an interdisciplinary project, training or experience lasting up to a year. All current graduate students (including master's, professional and Ph.D. students) in any program at Duke are eligible. Preference is given to proposals that include participation across schools and that include professional students as well as doctoral students.

Proposals require a lead faculty sponsor who agrees to mentor the group; an organizational sponsor (preferably a department, school or institute/initiative) willing to handle funds and provide logistical support; endorsement from an additional faculty member from a different discipline or school; a plan of work; and anticipated outcomes. Where appropriate, these activities should count toward curricular requirements.

Proposed projects or activities could include a year-long research team (e.g., on the Bass Connections model that incorporates undergraduates and engages with external partners such as community organizations); groups to explore a compelling theme or problem that cuts across disciplinary lines (e.g., a reading group, group independent study, dissertation writing group); or a joint effort to construct an interdisciplinary course for undergraduates.

Over the last 15 years, Duke has committed itself to furthering interdisciplinary education and research and fostering knowledge in the service of society. With maturing interdisciplinary organizations and communities on campus, Duke is well positioned to expand the interdisciplinary experiences available to graduate students.

Applicant Pool

In Spring 2016, we invited all current graduate students to propose interdisciplinary groups and activities. In response to the inaugural [RFP](#), we received 15 proposals, which were reviewed by an ad hoc committee convened by the Vice Provost for Interdisciplinary Studies with representation from faculty, institute directors and graduate students.

Five groups led by Duke graduate students received [2016-17 D-SIGN grants](#): Duke Conservation Society; Global Alliance on Disability and Health Innovation – Children and Adolescents Project; Global Energy Access Network; Rethinking Regulation – Graduate Student Working Group; and A STEM Researcher-Educator Network to Improve K-12 Science Literacy.

The ten student organizers (seven women and three men) came from the School of Nursing, Sanford School of Public Policy, Arts & Sciences and the Nicholas School of the Environment. Seven were doctoral students; three were master's students. The average award was \$13,238.

Grant Recipients

Group	Purpose	Student Organizer(s)	Faculty Sponsor(s)
Duke Conservation Society	The Duke Conservation Society will expand its network beyond the Nicholas School to engage interdisciplinary approaches to conservation. The group's mission is to enhance students' understanding of the scientific, political, economic and managerial tools available to address conservation issues; facilitate collaborations among undergraduate, master's and Ph.D. students on conservation projects and analyses; and provide opportunities for professional development.	Priya Ranganathan , M.E.M. student	Stuart Pimm
Global Alliance on Disability and Health Innovation –	The Bass Connections project team Global Alliance on Disability and Health Innovation (GANDHI) was designed with a focus on adults. A new interdisciplinary graduate network affiliated with	Brittney Sullivan , Ph.D. in Nursing student; Anna Martin , M.P.P. student	Janet Prvu Bettger

Group	Purpose	Student Organizer(s)	Faculty Sponsor(s)
Children and Adolescents Project	GANDHI will aim to establish the evidence for improving systems of care and support specifically for children and adolescents living with disability after an acute hospitalization. Using a socioecological approach to identify the key needs for children newly living with disability, network members will examine and compare the social supports, health and community services and policies in three countries. Members hope this project will inform future research to strengthen health systems for children and adolescents transitioning home from the hospital.		
Global Energy Access Network (GLEAN)	GLEAN will bring together students working on global energy transitions, energy access and energy poverty. It will create a forum to explore shared interests, learn from experienced researchers and practitioners and construct new statistical indicators around the theme of energy access in emerging economies. The group aims to ignite a research and policy dialogue around an understudied global issue, and to help position Duke as a central contributor to that dialogue within a global network.	Rob Fetter and Faraz Usmani , University Ph.D. Program in Environmental Policy students; Hannah Girardeau , M.E.M. student	Subhrendu Pattanayak and Brian Murray
Rethinking Regulation – Graduate Student Working Group	This group provides a forum for student-led interdisciplinary discussion, research and analysis of issues related to regulatory governance. Based in the Rethinking Regulation program at the Kenan Institute for Ethics, the group comprises 20 doctoral and professional students from nine disciplines and eight schools/departments. Members have a wide range of academic and professional experiences, and are united by a common interest in regulatory governance and a shared commitment to interdisciplinary collaborative inquiry in the service of society. Funding will support research workshops, writing group meetings, analyses of contemporary regulatory policy issues and other collaborative activities.	Mercy DeMenno , Ph.D. in Public Policy student	Lori Bennear and Jonathan Wiener
A STEM Researcher-Educator Network to Improve K-12 Science Literacy	A new network of STEM graduate students (from the Graduate School, Pratt School of Engineering and/or the Nicholas School of the Environment) and Master of Arts in Teaching students will create lesson plans based on current research and distribute them to local K-12 educators. The network will utilize the structure of a graduate student-run STEM outreach group, the Scientific Research and	Rebecca Lauzon , Ph.D. in Earth & Ocean Sciences student; Eleanor Caves and Patrick Green , Ph.D. in Biology students	Kate Allman and Brad Murray

Group	Purpose	Student Organizer(s)	Faculty Sponsor(s)
	Education Network (SciREN), which develops relationships between researchers and educators to incorporate current research into K-12 classrooms. All lesson plans created for SciREN are freely available to educators through an online repository.		

Selected Activities and Accomplishments

Global Alliance on Disability and Health Innovation (GANDHI) – Children and Adolescents Health Group

Brittney Sullivan (Ph.D. in Nursing '17) and Anna Martin (M.P.P. '17), established a graduate network affiliated with the Bass Connections project [Global Alliance on Disability and Health Innovation \(GANDHI\)](#) but focused on young people rather than adults. Their faculty sponsor was Janet Prvu Bettger (Nursing).

The group aimed to establish the evidence for improving systems of care for children and adolescents living with disability after an acute hospitalization. Using a socioecological approach to identify the key needs for children newly living with disability, network members set out to examine and compare the social supports, health and community services and policies in three countries.



GANDHI Children and Adolescents members meet with Dr. Joseph Lunyera (center). From left: Shem Opolot, Anna Martin, Brittney Sullivan, Joseph Lunyera, Jasmine Seider, Sarah Barton, Nelia Ekeji

The group held weekly meetings with guest speakers throughout the year, supplemented by four group dinners. Three members traveled to Uganda in April 2017 to conduct interviews and observe some of the organizations that the group identified.

Anna Martin and Nelia Ekeji '19 presented "GIS Study of Posthospital Services Supporting Children with Surgical Need in Uganda" at a Duke event, [Strategies to Strengthen Health Systems Globally](#). Doctor of Physical Therapy student Jasmine Seider presented "Assessing Capacity to Improve Pediatric Care

Transitions in Low-income Countries” at the American Physical Therapy Association’s Combined Sections Meeting in San Antonio. Sarah Barton, a Th.D. student and occupational therapist at Duke Health, presented “Pediatric Post-surgical Community Resource Geospatial Mapping in Uganda” at AcademyHealth’s Annual Research Meeting in New Orleans.

The group has a manuscript in submission, “Spatial Distribution of Rehabilitation Services for Children Following Surgery in Uganda: Using the Data to Plan Interventions.” At the end of the academic year, Sarah Barton was named the group’s leader for 2017-18. She is collaborating with undergraduate students on data analysis and manuscript preparation that uses the group’s qualitative data, and will give a presentation in April 2018 at the American Occupational Therapy Association’s annual conference.

Our Bass Connections GANDHI team, as well as the GANDHI-Child and Adolescent Health group, have created the opportunity for incredible research collaboration across disciplines and education levels. [...] We are working with two Ugandan organizations to assess the viability of handing over some of the work we have completed for continuation and local capacity building. –Brittney Sullivan

Global Energy Access Network (GLEAN)

Three graduate students teamed up with faculty sponsors Subhrendu Pattanayak (Sanford School of Public Policy) and Brian Murray (Nicholas School of the Environment) to bring together students across Duke who are working on global energy transitions, energy access and energy poverty.

Rob Fetter and Faraz Usmani (University Ph.D. Program in Environmental Policy students, Nicholas School and Sanford School) and Hannah Girardeau (Master of Environmental Management student, Nicholas School) established [GLEAN](#) to ignite a research and policy dialogue around an understudied global issue.



Dr. Tobias Schmidt of ETH Zurich presents a GLEAN talk on renewable energy investments in the developing world

Through the Energy Access Speaker Series, GLEAN organized seven talks by experts on energy, environment and development. Five of these events were co-organized with other Duke programs, which helped the members to forge new partnerships.

Several members worked with three paid research associates to compile a detailed annotated bibliography of energy, environment and development data sources available publicly that will be useful in creating an Energy Access Index.

At the end of the academic year, the group published an edited volume of energy access case studies, *Energy & Development*. The six chapters are coauthored by graduate or undergraduate students and focus on five countries (India, Indonesia, Madagascar, Nicaragua, Peru). With support from the Duke University Energy Initiative—GLEAN’s institutional home—the group will promote the publication widely.

The group received a follow-on D-SIGN grant for 2017-18 to conduct an energy access and air quality survey, engage two keynote speakers, produce case studies on energy and development and coordinate an “Imagine Energy” photo contest and exhibition.

GLEAN’s success has yielded three main insights. First, there is widespread interest in the role of energy in the developing world, and GLEAN can serve as an effective focal point for graduate students looking to join the growing global conversation around this topic. The Speaker Series—and its high attendance rates—are a case in point. Second, GLEAN has provided an interdisciplinary as well as a multilevel forum for its members to highlight the role energy plays across a range of policy arenas. Such opportunities are unfortunately rare. Finally, GLEAN members have revealed a deep interest in joining the global conversation around energy access with original research and academic contributions. For instance, the Master’s or PhD thesis of nearly every graduating GLEAN member has engaged with a key question in energy access, and several first-year members have expressed gratitude for the community and resources available to direct their internships, theses, and future professional development. – Hannah Girardeau, Rob Fetter and Faraz Usmani

Rethinking Regulation – Graduate Student Working Group

Based in the [Rethinking Regulation Program](#) at the Kenan Institute for Ethics, this [group](#) provides a forum for student-led interdisciplinary discussion, research and analysis of issues related to regulatory governance. Mercy DeMenno (Ph.D. in Public Policy student, Sanford School) sought a D-SIGN grant to support research workshops, writing group meetings, analyses of contemporary regulatory policy issues and other collaborative activities.

Faculty sponsors are Lori Benneer (Nicholas School) and Jonathan Wiener (Law). The group has grown to involve 25 students from 13 disciplines/programs and nine schools/departments as well as an active alumni group.

The group convened 12 research workshops in which members received feedback on their conference papers, articles, dissertation proposals, chapters and research plans. Presentations covered a range of topics, including regulatory impact assessment, regulatory disclosure regimes for fracking, regulating

household energy technology, private accreditation in education, water and sanitation service provision in the Middle East and tort reform.

In addition, the group convened two writing groups that met twice per month. One group focused on dissertation prospectus and grant proposal development while the other focused on dissertation articles, chapters and extensions.



A key initiative was the development of a student-led regulatory governance blog. The [Rethinking Regulation Blog](#) publishes short articles connecting scholarly work to contemporary regulatory policy issues, with an emphasis on interdisciplinary, collaborative and applied academic inquiry.

Creating a research community and professional network for graduate students has been one of the most rewarding experiences of my academic career thus far. Feedback from current and former RR-GSWG members highlights the perceived value of creating an intellectual home for interdisciplinary scholars interested in applied research on regulatory governance. –Mercy DeMenno

A STEM Researcher-Educator Network to Improve K-12 Science Literacy

Three doctoral students teamed up with faculty sponsors Kate Allman (Program in Education) and Brad Murray (Nicholas School) to create a network of STEM graduate students and Master of Arts in Teaching students who work together on lesson plans for local K-12 educators. Rebecca Lauzon (Ph.D. in Earth & Ocean Sciences student, Nicholas School), Eleanor Caves and Patrick Green (Ph.D. in Biology students) utilized the structure of the [Scientific Research and Education Network](#) (SciREN), which develops relationships between researchers and educators to incorporate current research into K-12 classrooms.

These group leaders recruited two MAT students and 17 STEM researchers to develop K-12 lesson plans. These students produced 16 lesson plans, which they shared with 150 educators at SciREN's annual networking event and added to SciREN's portal.

The group selected "Polymers Matter" and "Modeling Cell Organelles" for inclusion in SciREN's lesson plan kit program. Educators were able to order these lessons and receive all the necessary supplies

through the mail. These two lessons reached six schools and 400 students. They further shared “Exploring Marshes and Barrier Islands with a Scientific Model” and “Make It Rain: The Water Utility Management Game” with an additional 50 educators at SciREN Coast, an educator-researcher networking event organized by the Duke and UNC marine labs.

The network further organized two workshops for STEM researchers: “Demystifying STEM Outreach,” which 60 people attended; and “Getting Down to Basics: Strategies for Communicating Complex Science,” an interactive workshop that attracted 25 students. From these events, the group produced a [database](#) of outreach/science communication opportunities.



Participants in a SciREN workshop

Pre- and post-surveys revealed that after participating in the network, STEM graduate students felt more qualified to do outreach with K-12 students and educators and to create lesson plans. The MAT students felt they built a network of scientists and gained experience-planning lessons on complicated subjects.

In September 2017, Rebecca Lauzon presented a poster based on the group’s work (“Scientist-educator network to improve K-12 science literacy”) at the Environmental Educators of North Carolina conference in Fuquay-Varina.

While we did succeed in our goal of connecting researchers and educators, feedback from the STEM participants in our network revealed that they would have appreciated opportunities to also network with the other researchers. [...] We obtained funding from the MAT program to continue this partnership this summer to create six more lesson plans, and are incorporating these lessons learned by scaling down the number of participants so we have time to check in with individuals and by connecting the STEM students and facilitating networking. –Rebecca Lauzon

Duke Conservation Society

With faculty sponsor Stuart Pimm (Nicholas School), Priya Ranganathan (Master of Environmental Management student, Nicholas School) sought a D-SIGN grant to expand the [Duke Conservation Society](#) beyond the Nicholas School to engage interdisciplinary approaches to conservation.



Duke Conservation Society board members

The group's mission is to enhance students' understanding of the various scientific, political, economic and managerial tools available to address conservation issues; facilitate collaborations among undergraduate, master's and Ph.D. students on conservation projects and analyses; and provide opportunities for professional development such as networking with conservation professionals, seminars and guest speakers.

The Duke Conservation Society organized multiple symposia and events geared toward sharing international perspectives on conservation. Members worked with Conservation X Labs, a company that produces technology for wildlife conservation, and Duke Conservation Tech, a student organization affiliated with the Pratt School of Engineering, to produce [Blueprint: People + Wildlife](#). This was a competition for teams of undergraduate and graduate students in the Triangle area to create blueprints for novel conservation technologies to assist in fighting the illegal wildlife trade. Approximately 50 students participated in teams.

The group also used the D-SIGN grant to for a dinner seminar to discuss a project on urban gardening that the Divinity School and the Nicholas School will undertake together. The dinner featured Saskia Cornes of the Duke Campus Farm and Norman Wirzba of the Divinity School. The speakers discussed the intersection of conservation, urban agriculture and Christianity, and students from both schools collaborated on designs for the proposed courtyard garden at the Divinity School.

The D-SIGN grant was immensely helpful in allowing the Duke Conservation Society to move forward with a more interdisciplinary and internationally-focused approach to conservation that students were less exposed to in regular coursework. Students attending D-SIGN-funded events thought that the lectures were thought-provoking and of a higher caliber than other events hosted in previous years. Additionally,

through the events organized by DCS with the grant, more students were able to participate in hands-on conservation projects and engage with other schools in a way that mirrors conservation in practice in the world today. –Priya Ranganathan

Looking Ahead

A January 2017 [RFP](#) invited master's, professional and Ph.D. students to propose an interdisciplinary project, training or experience lasting up to a year. We received 14 proposals for the second D-SIGN cohort.

Six graduate student groups [received D-SIGN grants for 2017-18](#). The 15 student organizers (nine women and six men) came from Arts & Sciences, the Nicholas School of the Environment, the Pratt School of Engineering, the Sanford School of Public Policy and the Duke Global Health Institute. Eleven are doctoral students; four are master's students. The average award was \$8,605. Student organizers will report on their activities by June 30, 2018.

Group and Purpose	Student Organizers	Faculty Sponsor(s)
Desarrolla México is one of five projects developed by Duke Desarrolla. This group will conduct a summer project in Ejido Playa Grande, helping a rural community develop a renewable energy strategy and a formal business plan for its environmentally sustainable ecotourism business. The group aims to promote a consultant-based approach to international development, connecting community members to business, marketing and engineering experts who can help them reach their business goals. This project is part of a research study on the obstacles faced by rural residents when attempting to reinvest funds received from Payments for Ecosystem Services programs into a community business.	Ruxandra Popovici , Ph.D. in Environment student; Emilio Blanco Gonzalez and Adam Cullen , M.Eng. in Mechanical Engineering students	Elizabeth Shapiro-Garza
The Global Energy Access Network (GLEAN) includes more than 50 graduate and professional students across Duke. The group will use this follow-on grant to elevate the prominence of the global energy access challenge on campus; foster an interdisciplinary community of graduate and professional students wanting to engage with this challenge in their work; and offer opportunities to this community to do so. Activities will include an energy access and air quality survey, engagement with two keynote speakers, case studies on energy and development and an "Imagine Energy" photo contest and exhibition.	Yating Li and Faraz Usmani , Ph.D. in Environmental Policy students; Muye Ru , Ph.D. in Earth & Ocean Sciences student; Heidi Vreeland , Ph.D. in Civil & Environmental Engineering student	Subhrendu Pattanayak and Brian Murray
The Global South after 2010 will explore the aesthetics, ethics and politics of transnational violence in the Global South. Are there systematic trends in the types of sociopolitical violence that have characterized social movements after the Arab Spring? How has this violence been represented in the media and in popular culture? What are the legal and political consequences of such representations? Activities will include three seminars with	Renee Ragin , Ph.D. in Literature student; Giulia Ricco , Ph.D. in Romance Studies student	Deborah Jenson and miriam cooke

Group and Purpose	Student Organizers	Faculty Sponsor(s)
<p>guest facilitators and a graduate student conference. Student participants will come from humanities and social science programs in the Graduate School, as well as from Fuqua, Sanford and Law. The organizers aim to create an edited anthology at the conclusion of this working group.</p>		
<p>In the Lowndes County Sanitation Access Network, students from Divinity, Law, Nicholas, Pratt and Sanford will undertake a community-based research project to improve wastewater treatment in Lowndes County, Alabama, where 90% of households have inadequate or no access to sanitation. More than 80% of households cannot connect to the municipal sewerage and must finance their own septic systems. With a median household income among the lowest in the U.S., many households cannot afford to do so. In addition, half of the septic systems are failing. Poor sanitation poses serious health risks (including hookworm, found in fecal samples from Lowndes County residents). The group will take the lead in diagnosing the interlaced physical, financial, legal and political barriers to sanitation access and evaluate potential solutions.</p>	<p>Emily Meza, M.E.M. student; Katy Hansen, Ph.D. in Environmental Policy student; Ryan Juskus, Ph.D. in Religion student</p>	<p>Erika Weinthal and Elizabeth Albright</p>
<p>In the Modeling Health & Environment Graduate Working Group, graduate students from diverse backgrounds will design a course for undergraduates on systems thinking and modeling in health and environment. Graduate students with backgrounds in energy, environmental studies and health will collaboratively develop instructional models based on real-world case studies that will serve as course materials for the undergraduate course. Through their interdisciplinary collaboration and the process of contributing to the course, the graduate students will acquire system dynamics modeling skills as well as relevant subject matter knowledge on global health, the environment and the interconnections between the two.</p>	<p>Shashika Bandara, M.Sc. in Global Health student; Varun Mallampalli, Ph.D. in Civil & Environmental Engineering student</p>	<p>Kevin A. Schulman and Mark Borsuk</p>
<p>The Network to Enrich GALS Summer Science Program will aim to improve the training of Girls on outdoor Adventures in Leadership and Science (GALS) leaders and foster a community of environmental educators for a broad array of disciplines. GALS is piloting a free two-week summer camp for girls aged 15-18 from underrepresented backgrounds to encourage them to pursue STEM fields. Activities include facilitating interdisciplinary working groups to improve lesson plans and the structure of GALS; expanding resources for GALS leaders and increasing the number of leaders; sharing the curriculum and logistics to encourage similar programs across North Carolina; and creating mentorship programs between Duke students from underserved communities and GALS participants.</p>	<p>Jacqueline Gerson, Ph.D. in Ecology student; Emily Levy, Ph.D. in Biology student</p>	<p>Erika Weinthal, Nicolette Cagle, Naomi Kraut and Megan Mullin</p>

The next request for proposals will be released in early 2018. Any current Duke graduate student may submit a proposal for interdisciplinary projects, trainings or experiences during the 2018-19 academic year.

Questions?

Please [contact us](#) at the Office of the Vice Provost for Interdisciplinary Studies (216 Allen Building, 919-684-1964, interdisciplinary@duke.edu).