

**Luksic Collaboration Grant - Awarded Proposals 2013-2015**

Notre Dame Principal Investigator(s)	Project Name	Brief Description	PUC Collaborator(s)
<b>Biological Science</b>			
Mark A. Suckow	Transformation Through Comparative Medicine: Collaborative Acceleration of Research	Notre Dame experts to assist PUC in developing a strategic plan for AAALAC accreditation of the comparative medical animal research facilities. This collaboration will trigger many interactions between Notre Dame and PUC scientists.	Andrea Leisewitz
<b>Business</b>			
Zhi Da	The Economics of Chilean Pension System	This project will be carried out jointly with Profs Borja Larrain and Jose Tessada. The Projects seeks to use unique data and local scholarly insights into the pension system in Chile to generate and test meaningful hypotheses about the economics of pension funds in general. The project consists of data-gathering and analysis and the opportunity to present the written scholarship that will come out of the collaboration at international conferences.	Borja Larrain and Jose Tessada
<b>Chemistry &amp; Biochemistry</b>			
Norman Dovichi	Quantitative proteomics of the regenerating spinal cord	This proposal will catalyze collaboration between research groups at Notre Dame and Catholic University of Chile to address fundamental aspects of spinal cord regeneration following damage. Damage to the spinal cord leads to catastrophic paralysis after serious trauma. <i>Xenopus laevis</i> , the African clawed frog, provides an interesting model organism for study of the regeneration of the spinal cord following damage. <i>Xenopus</i> has regenerative and non-regenerative stages. As a tadpole, it is fully capable of functional recovery after a spinal cord injury, while its juvenile form (froglet) loses this capability during metamorphosis. We envision that comparative studies between regenerative and non-regenerative stages in <i>Xenopus</i> could aid in understanding why spinal cord regeneration fails in human beings.	Juan Larrain
Brian M. Baker	Joint Symposium for Collaborative Science.	Follow-up to Spring 2014 visit by College of Science chairs and associate deans to Chile and PUC in particular; symposium involving 20-25 Notre Dame faculty, graduate students and administrators interfacing with PUC counterparts (January 2015)	Juan Larrain
A. Graham Lappin	Collaborative research effort in chemistry	Following a PUC graduate student's (Departamento de Química Inorgánica) visit to ND for 5 months in fall 2013, two ND faculty will visit PUC in spring 2014 to discern opportunities for broader interactions in chemistry between PUC and ND, including potential graduate student exchange opportunities.	Mauricio Alejandro and Isaacs Casanova

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<b>Civil &amp; Environmental Engineering &amp; Earth Sciences</b>			
Alexandros Taflanidis	Enhancing Community Resilience Against Natural Hazards: A Collaborative Approach to a Global Challenge	In recent decades increased urbanization and mass migrations towards cities have contributed to population shifts and infrastructure growth in some of the world's most hazard-prone areas. The inevitable result is particularly large life and economic loss potential, something that has unfortunately been confirmed far too often by the thousands of lives lost and communities devastated in recent events like the earthquakes in Haiti, Chile, New Zealand and Japan. These conditions have created a motivation for engineers and researchers across the world to coordinate their efforts in addressing what is now widely considered as one of the great challenges of the 21st century: enhancing community hazard-resilience and adaptation capacity. The civil engineering departments at ND and PUC have risen to this challenge and have made this topic a strategic focus of their recent efforts. The faculty members involved in this grant intend to formulate a strategic plan to better formalize a partnership with PUC on hazard-resilience during an eight-day-long visit to PUC at the time of the XI Chilean Conference on Seismology and Earthquake Engineering ACHISINA 2015 (that PUC is organizing) and the Ph.D. defense of Rafael Ruiz, one of the first students completing the dual Ph.D degree between the two institutions (co-advised by Dr. Taflanidis and Dr. Lopez-Garcia). The ND delegation will include Dr. Kijewski-Correa, Dr. Taflanidis, Dr. Mavroeidis and graduate students Kevin Fink and Ioannis Gidaris (lead authors of two papers that being considered for the	Diego Lopez-Garcia
<b>Computer Science &amp; Engineering</b>			
Chaoli Wang	Visualization and Recommendation of Large Image and Text Collections toward Effective Sensemaking	Graphs are node-link diagrams that encode general data relationships and have been widely used in data visualization and visual analytics. This joint project between UND and PUC targets iGraph, a framework we developed for visualizing and exploring large image and text collections. Finding relevant items in a large visualization with tens of thousands of linked images, such as the graphs displayed by iGraph, can easily lead to cognitive overload. Therefore, our main purpose is to support user exploration with adaptive navigation and effective recommendation.	Denis Parra
<b>Economics</b>			
Wyatt Brooks	Andronico Luksic Conference on Economic Analysis	This proposal is to support a research conference between faculty at the Department of Economics at the University of Notre Dame and the faculty of the Instituto de Economia at Pontificia Universidad Católica (PUC) in March 2014 in Santiago. The main purpose of the conference is to build on existing ties between the two departments, and develop relationships that will benefit both departments. Strong interdepartmental links encourage faculty interaction, develop student learning opportunities and foster international collaborative research. These benefits have been recently highlighted in the Memorandum of Understanding signed by both universities, which calls for closer scholarly engagement between the two institutions.	Loris Rubini, Economics

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<b>Engineering</b>			
Yih-Fang Huang and Vijay Gupta (Electrical Engineering)	Distributed Sensor Networks for Monitoring and Mitigating Natural Hazards	Support travel of two ND faculty as they work closely with two PUC faculty members to develop distributed sensor networks (DSNs) applicable to monitoring and mitigating natural hazards. Faculty members from ND and PUC will meet to explore the expertise of both parties to establish a fruitful and sustainable research collaboration in theory and applications of DSNs for natural hazard management.	Miguel Rios, Christian Oberli, and Christian Escarriaza
Fabio Samperlotti and Mihir Sen (Aerospace and Mechanical Engineering)	Initiation of ND-UC Collaboration on Solid-State Thermomechanics and Thermosacoustics	The long-term goal of this project is to initiate collaboration between ND and PUC on the use of mechanics, thermodynamics and acoustics to aerospace and mechanical engineering applications such as energy harvesting and manufacturing. This grant will support a visit by the Project Director to PUC for a week in fall 2013 (to discuss research topics of common interests in order to initiate a synergistic collaboration between the two institutions) and by ND undergraduate interns working at PUC during the summer 2014.	Jorge Ramos-Grez
Tengfei Luo (Aerospace and Mechanical Engineering)	Initiation of ND-UC Collaboration on Nanoscale Thermoelectric Materials	Initiate a collaboration between Notre Dame and PUC on the research of nanoscale thermoelectric materials; visit by Luo to PUC; set collaboration to prepare first candidate for to-be-established ND-UC dual PhD program.	Amador Guzman
Vijay Gupta and Yih-Fang Huang (Electrical Engineering)	Commercial Charging Stations for Plug-in Electric Vehicles: Scheduling Algorithms and Pricing Mechanisms	Commercial charging stations will be crucial for any large-scale integration of plug-in hybrid electric vehicles and plug-in electric vehicles (together denoted by PEVs from now on) into the power grid. However, academic research has largely bypassed design of this important component in the PEV ecosystem. This proposal provides a research roadmap for this area of great societal relevance. Specifically, this proposal aims at posing and solving various optimization problems that will arise for the commercial charging station owners at the distribution / retail level. The researchers at Notre Dame and at Pontificia Universidad Católica (PUC) provide complementary expertise and experience; a formal opportunity such as this will lead to large new initiatives making both Notre Dame and PUC leaders in this important and upcoming area.	Matias Negrete-Pincetic and Hugh Rudnick
Hsueh-Chia Chang (Chemical and Biomolecular Engineering)	A High-Throughput Optical Micro-Well Reactor Array Technology for Massively Parallel Drug Discovery by Directed Evolution'	Further the collaboration of Notre Dame and PUC in developing a revolutionary drug discovery platform	Loreto Parra and Amador Guzman
<b>German and Russian Languages &amp; Literature</b>			
Robert Norton & Walter Eckel	Symposium on Hans-Georg Gadamer	The symposium on the German philosopher Hans-Georg Gadamer, scheduled for April 9 to 11, 2015, will be the first activity of the planned triangular cooperation between the University of Notre Dame, the Pontificia Universidad Católica de Chile and the University of Heidelberg. The second activity will be a Summer School for doctoral students in the field of anorganic chemistry, scheduled for July 13 to 24, 2015	Eduardo Fernandois, Francisco de Lara, Mariano de la Maza, and Pablo Oyarzun

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<b>History</b>			
Felipe Fernandez-Armesto	A Proposal for Collaboration in History	In collaboration with Ximena Illanes, History Dept at Pontificia Universidad Católica (PUC). This proposal aims to create partnerships for the advancement of scholarship and teaching between Notre Dame's History Department and the Instituto de Historia of PUC, by means of a new and distinctive program of exchanges. Our aim in the short-term is to enhance teaching in history in both universities by introducing La Católica's professors (and promising graduate students with teaching responsibilities) to Notre Dame's classroom culture and vice versa, and by bringing professors from each institution into pedagogic planning and conversation at the other.	Ximena Illanes
<b>Law School</b>			
Joseph Bauer	Collaboration with Pontifical Catholic University on Antritrust (Competition) Law	Proposal to attend a conference on Competition Law organized by Pontificia Universidad Católica (PUC), allowing Prof. Bauer to meet with faculty and administrators from PUC and generate future collaborations at both the faculty and student level around this important international topic.	Elina Cruz and Carolina Barriga
<b>Mathematics</b>			
François Ledrappier	Dynamical Systems at PUC Santiago.	Professor Ledrappier has been invited to participate to an international conference on Dynamical Systems "Beyond Hyperbolicity" organized by, among others, the Dynamical Systems group in the mathematics department at PUC. The Grant would allow him to travel to Santiago and to spend one more week to give lectures and to discuss with the members of that group.	Mario Ponce
<b>Political Science</b>			
Michael Coppedge	Varieties of Democracy in Latin America	Hold a workshop at PUC in January 2014 to bring together members of the V-Dem team from all over Latin America and hold a public event at PUC to publicize and disseminate the findings of V-Dem. V-Dem is an international research collaboration that is producing new indicators of hundreds of attributes of democracy for every country and colony in the world from 1900 to the present.	David Altman
<b>Philosophy</b>			
John O'Callaghan	Moral and Juridical Responsibility in an Age of Side-Effects	In an increasingly globalized world, the traditional moral and legal boundaries separating the actions, and corresponding moral or legal liabilities, of individuals, businesses, and nations has become less and less credible. International divestment and boycott campaigns, greater corporate attentiveness to socially responsible investment strategies (SRI), heightened awareness of the adverse effects of local industry and consumption on other parts of the globe (e.g., climate change), and the rising legitimacy of international law and juridical institutions, all bear witness to an emerging moral and legal consciousness that demands some systematic reflection on the principles that should undergird our analysis of the moral and legal responsibility individuals or collectives ought to have for the foreseen, but unintended, effects of their action, i.e., 'side-effects.' We propose to hold an interdisciplinary research workshop that would bring together historians, lawyers, philosophers, political scientists, and theologians to explore this topic at the Pontifical University of Chile.	Cristóbal Orrego Sánchez



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<b>Physics</b>			
Kenneth Cecire and Mitchell Wayne	Masterclass Institutes Collaborating in the Americas (MICA)	Project MICA, Masterclass Institutes in the Americas, will build particle physics masterclasses in Chile through collaboration between the particle physics group at Pontificia Universidad Católica (PUC) and the QuarkNet Center at Notre Dame. The project director and a QuarkNet teacher will visit PUC in Santiago to facilitate a workshop to prepare high teachers and students, along with their physicist mentors from PUC, for an international masterclass in which they collaborate by videolink with their counterparts at Notre Dame. They will also work with PUC particle physicists to plan the masterclass and further collaboration in both outreach and particle physics.	Benjamin Koch
Peter Garnavich	Strengthening Astrophysics Collaboration with PUC Through INCAI	ND and PUC have two of the strongest astrophysics research programs of any Catholic institutions. Goal is to strengthen the connection between these two institutions by sending two ND graduate researchers to Santiago. These students will represent ND at the International Network of Catholic Astronomy Institutions (INCAI) workshop being hosted by PUC. Students will present talks at the conference and meet individually with PUC faculty to discuss their research. The INCAI conference is likely to be hosted by Notre Dame in 2014 and PUC faculty and students are expected to attend.	Alejandro Clocchiatti
L. Arielle Phillips	High Z in Chile: Connecting PUC and Notre Dame to the 2011 Nobel Prize in Physics	With Yael Prizant (Notre Dame Film, Theater and Television) will record oral histories of PUC scientists who were members of the High Z Supernova project team: Alejandro Clocchiatti, Mark Phillips and Chris Smith)	Alejandro Clocchiatti
<b>Sociology</b>			
Samuel Valenzuela	Research Proposal: The New Party System in Chile	Collaborate with Department of Sociology faculty at PUC on scholarly article on the configuration of the present day Chilean party system. The research will require traveling between ND and PUC and the hire of research assistant at PUC.	Nicolás M. Somma González