

# Educating Students for the 21st Century Through Research Abroad Experiences: The BRAVO! Program

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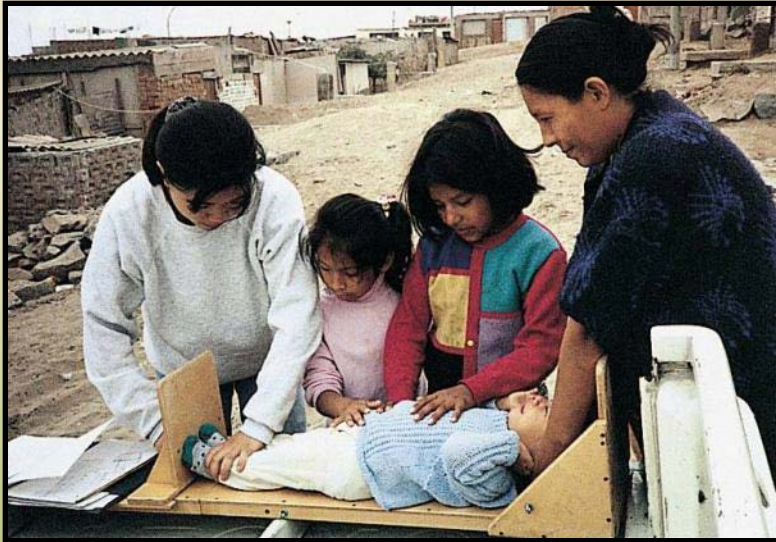
# Convergence of Events

- Velvet Revolution
- Developing research collaboration between Drs. Grubhoffer, Wells, and Law
- Development of the Undergraduate Biology Research Program at the University of Arizona



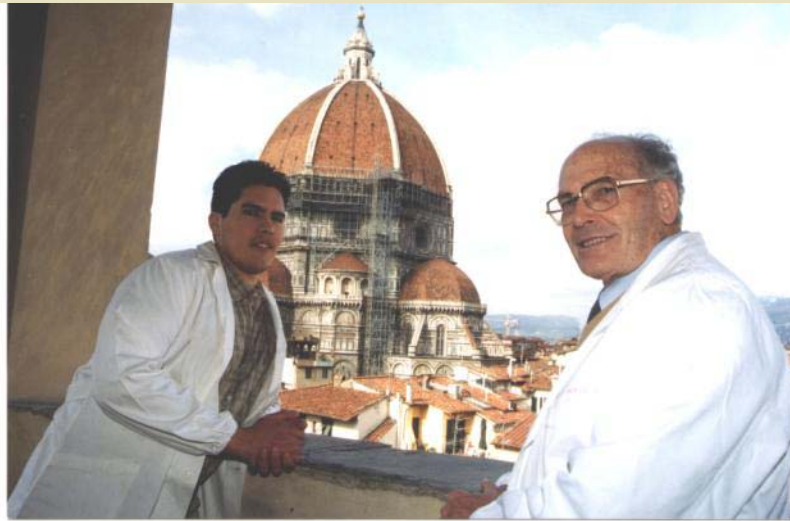
THE UNIVERSITY  
OF ARIZONA.®

- State's Land Grant Institution
- Includes colleges of Science, Pharmacy, Optical Sciences, Agriculture, Nursing, Engineering, Medicine, Public Health
- Known for Interdisciplinary Research
- Enrollment of 38,000 including 28,000 undergraduates
- Hosts more than 3,000 international students and scholars per year



Research Experienced  
Undergraduates +  
Visiting International  
Scholars =  
Undergraduate Students  
Eager for an  
International Research  
Experience!

# Result: Development of the Biomedical Research Abroad: Vistas Open! Program



- Program goal: To ensure that students are equipped with the knowledge, tools, and experiences to be responsible and productive members of global society

# History of BRAVO!



- Started in 1992
- Builds on strengths at UA (visiting scholars/ researchers with international connections)
- Provides means for students to integrate with visiting international scholars
- 180 UA students supported to date
- 2 foreign undergraduates; 19 foreign graduate students and 20 foreign mentors supported to date

# Distinctive Features of BRAVO!



Japan

- Research experience, not traditional “study abroad”
- Highly individualized (student becomes our scientific ambassador)
- Student’s expenses are paid -- stipends and research supplies can be funded



# Specific Data about UA/USB Exchanges



9 UA undergraduates,  
1 UA medical student,  
2 UA faculty members  
did research at USB;

4 USB/Czech  
Academy of Sciences  
Faculty, 7 USB  
graduate students did  
research at UA



# Examples of Projects



- Is extracellular ATP in blood a phagostimulant in ticks? (UA student working at Institute of Parasitology)
- Analysis of transcription through amplification of nuclear RNA (USB student working at UA)

# Application Process for UA Students:

- Student becomes research experienced
- Student approaches UA mentor about identifying an appropriate foreign mentor and research group
- Student prepares a five page proposal for the work to be done abroad; for a copy of the application see:  
<http://ubrp.arizona.edu/bravo/default.cfm?id=app>
- Student presents plan for research abroad to selection committee



Thailand

# Once approved the BRAVO! student:

- Participates in a two-evening cultural orientation
- Works with program director on transportation, additional scientific training, reviewing program obligations, securing visa and immunizations
- Works with UA and foreign mentors on human and animal subjects approvals, collecting permits
- Arranges housing with foreign mentor



Ecuador

# Upon return the BRAVO! student:

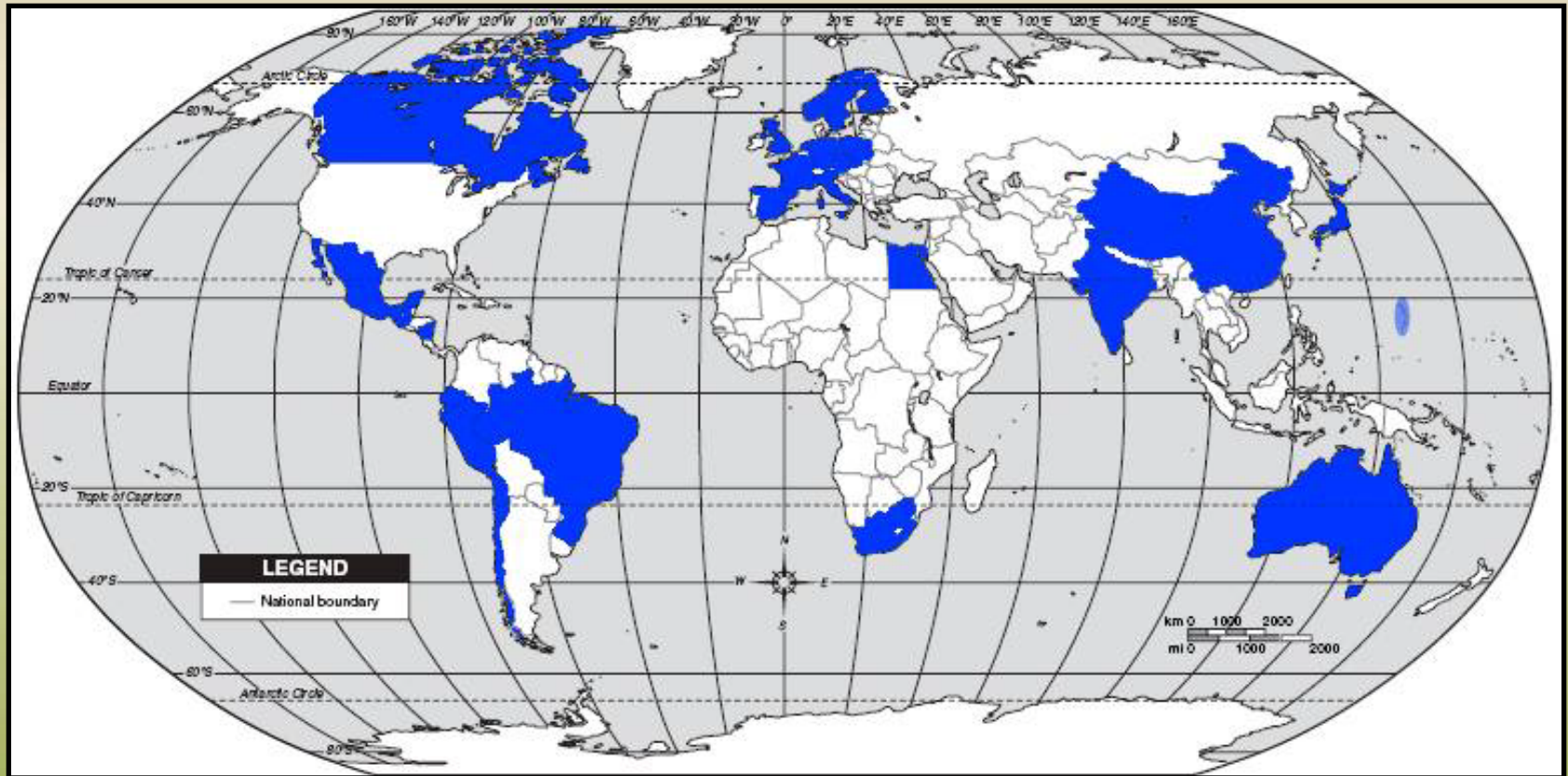
- Provides an article for the program newsletter
- Submits receipts for housing, travel, research supplies
- Makes a datablitz presentation
- Makes a presentation to an off campus group
- Completes a written evaluation
- Pledges to stay in contact with the program for LIFE



The Netherlands



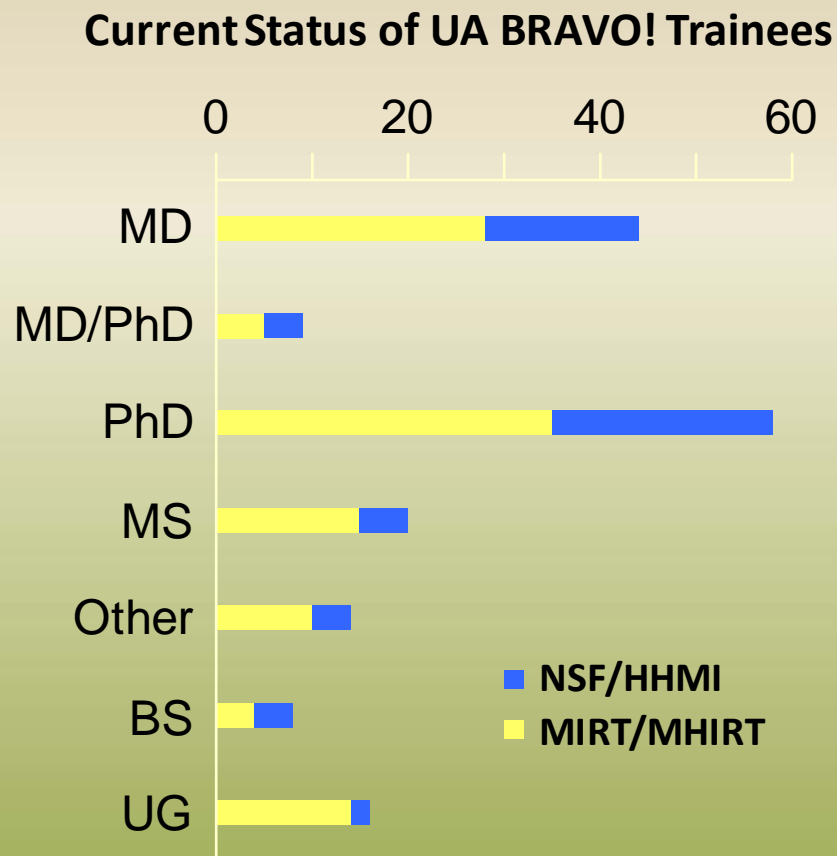
# BRAVO! Placements 1992-2009



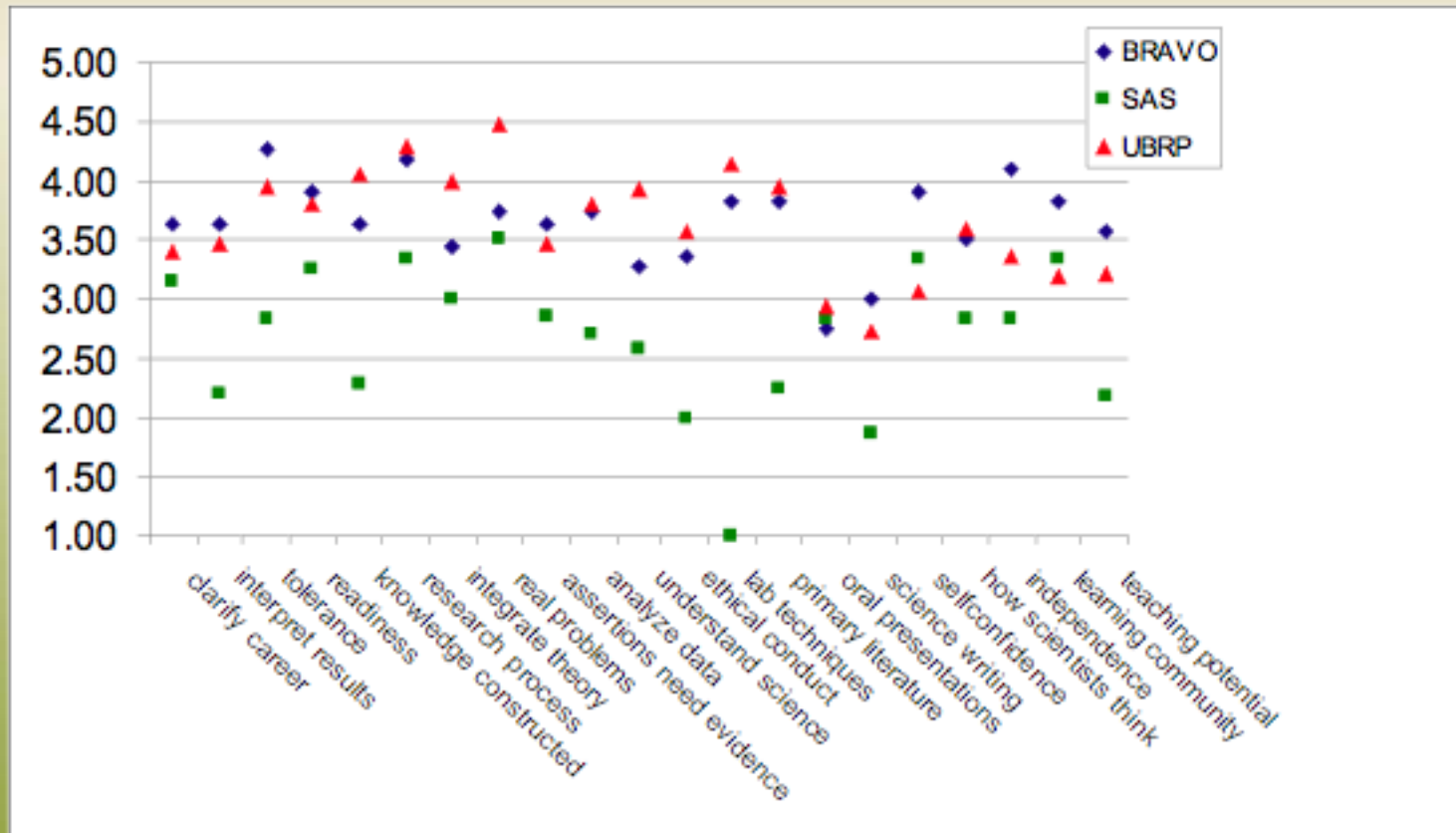
**34 countries -- 6 continents**  
**89 foreign institutions**

# BRAVO! Evaluation

- Written evaluations
- Mentors' and students' comments (and mentors' continued participation)
- Record of publications and presentations
- Students' subsequent activities



# Comparison of Self Reported Learning Gains Across Programs





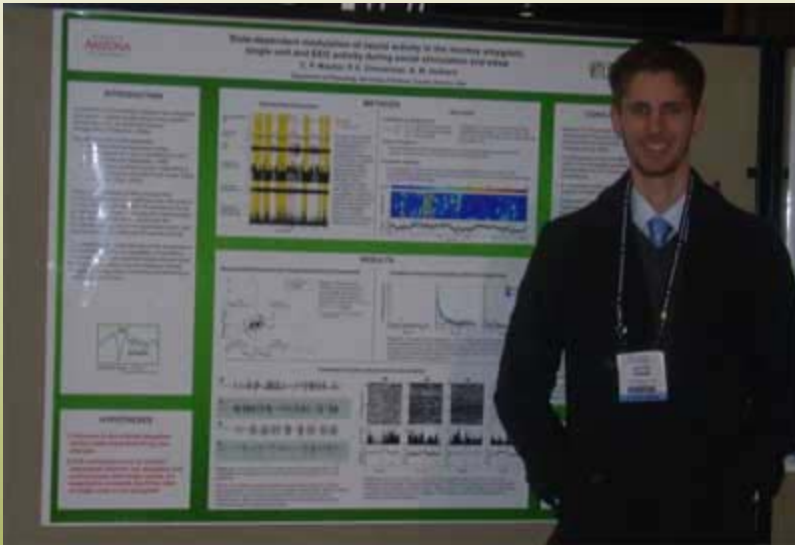
# Advantages of Offering International Research Experiences



Czech Republic

- Prepares students both scientifically and culturally to contribute to the solution of problems facing humankind
- Powerful impact on students' personal and professional goals
- Attractive for student recruitment
- Potential to advance knowledge

# Disadvantages of Offering International Undergraduate Research Experience



- Program Coordination is labor and time intensive
- Expensive

# Acknowledgments



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