

Shah Labs Update Meeting

October 26, 2020

GLOBAL ENGINEERING

PROGRAMS & PARTNERSHIPS



Agenda

Item	Presented By
Welcome, Agenda Setting, IDEAS Series	Rhonda Haan
Shah Lab Update	Pallavi Gupta
Shah Lab Success Story	Young Kim
Shah Lab – Social Impact Firestarter	Bill Arnold
Challenges/Considerations of Working in the Field	Sonak Pastakia
Kenya Engagement Update	Diana Harbison
Thanks and Close	Rhonda Haan

IDEAS Discussion Series

Rhonda Haan

IDEAS Discussion Series

Insight. Dialogue. Engagement. Action. Scale

- International Development Sector –
 - Challenges they are facing / problems trying to solve in regards to COVID
 - Collaboration
- Faculty and Partners –
Discussion centering around
 - Projects and research
 - Problem areas and gaps
 - Created tech and solutions.
- How it works -
 - Work with your timeline
 - Help setup conversations/edit/share
 - Partners/donors/lead to possible grants
 - Students or future students
 - Record of your project.

Current Conversations

1. **SEWA – Reema Nanavaty and Pallavi Gupta (on our YouTube channel)**
2. **Jackie Linnes and Gopi Gopalakrishnan (final editing stage)**
3. **Stacey Connaughton (in planning stage)**
4. **CRS (in planning stage)**
5. **Looking for more participants...**

The screenshot shows a video player interface. At the top left, there is a portrait of Reema Nanavaty, a woman with grey hair wearing a white shawl. To her right, the text reads: "Reema Nanavaty", "Secretary General, Self Employed Women's Association (SEWA), India", "A Padma Shri Awardee", and the URL "http://www.sewa.org". A QR code is located to the right of her text. At the bottom left, there is a portrait of Pallavi Gupta, a woman with dark hair. To her right, the text reads: "Pallavi Gupta", "Asst. Director of Programs", "Shah Family Global Innovation Labs", "Purdue University", and the URL "https://engineering.purdue.edu/GEP/ShahLab". A QR code is located to the left of her text. The video player controls at the bottom show a play button, a progress bar at 0:01 / 42:02, and various icons for volume, settings, and full screen.

<https://engineering.purdue.edu/GEP/ShahLab/IDEAS>

Shaw Lab Updates

Pallavi Gupta

Shah Lab Overview

- **Impact overview**
- **Seed grant 2021 cycle update**
- **Lessons learnt across projects**

Shah Lab Seed grant Impact (work in progress...)

Advancing Research & Development

- Publications / Conferences / Patents
 - 2019-2020 : 4+ Publications ; 2 provisional patents
 - 2016-2018 : 10 + Publications; 4+ patents
- Research / Pilot / Scale Grants
 - 2019-2020 : approx. \$2,340,000
 - 2016-2018 : approx. \$2,505,000
- Cross Campus Partnerships
 - Faculty across Purdue supported: 40+
 - Partnering entities across campus: 12+

Advancing Regional & Issue Knowledge

- Discussions with Sector Experts
 - IDEAS series: Advancing regional & social issue knowledge; project learnings
- Partnerships & Regional Footprint
 - Current & Potential Partners engaged: 40+
 - Regional Footprint: 16+ countries

Advancing Social Impact

- Scaling & Replication Support
 - Humanitarian IP
 - Shah Lab Social Impact Firestarter in partnership with Foundry (3+ social startups)
- Proposal Coordination & Facilitation
 - > 2019: Proposals supported : 47

2021 Seed Grant Cycle Update

- **2021 Seed Grant Awards Cycle:** Currently in Problem Collection phase
- **Next Steps:** Request for Interest - > Problem statement selection -> Invitation for RFP ->Proposal submission -> Seed grant Award selection.



Imp observations & Lessons across projects

- ❑ Spend time with the partner to build trust and relationship
 - Rely on their strengths
 - Lean on their network and local connections (eg. procurement, material, manufacturing etc)
 - Include in future proposals, scaleUP plans
 - Understand cultural context - this will help in effective communication

- ❑ Spend time to understand the history of the effort
 - What was done, what worked, what failed and why.
 - Market analysis – in terms of solutions , cost points etc

- ❑ Get a designated point of contact

- ❑ Personal and individual relationships yield faster responses – also opens up additional opportunities

- ❑ Ask clarifying questions on expectations early in the collaboration, also state yours

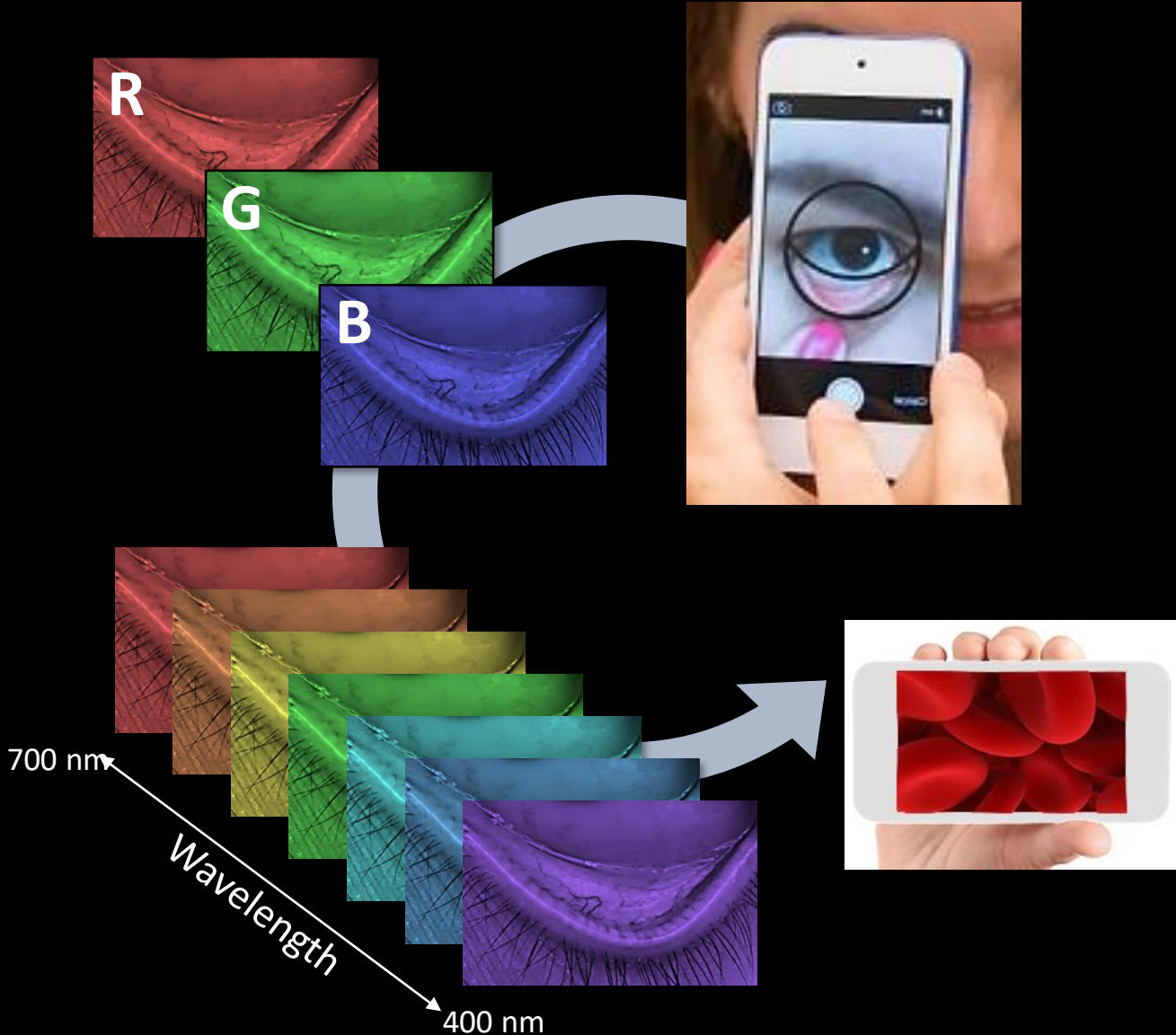
- ❑ Create an execution plan early on – who is doing what and by when and identify if any transfer of funds is needed. (As this may take time and your BO's involvement)

Shaw Lab 'ongoing' Story

Young Kim

mHealth spectroscopy

Data science minimizes hardware complexity



Smartphone image
of inner eyelid

Spectral super-resolution
algorithm

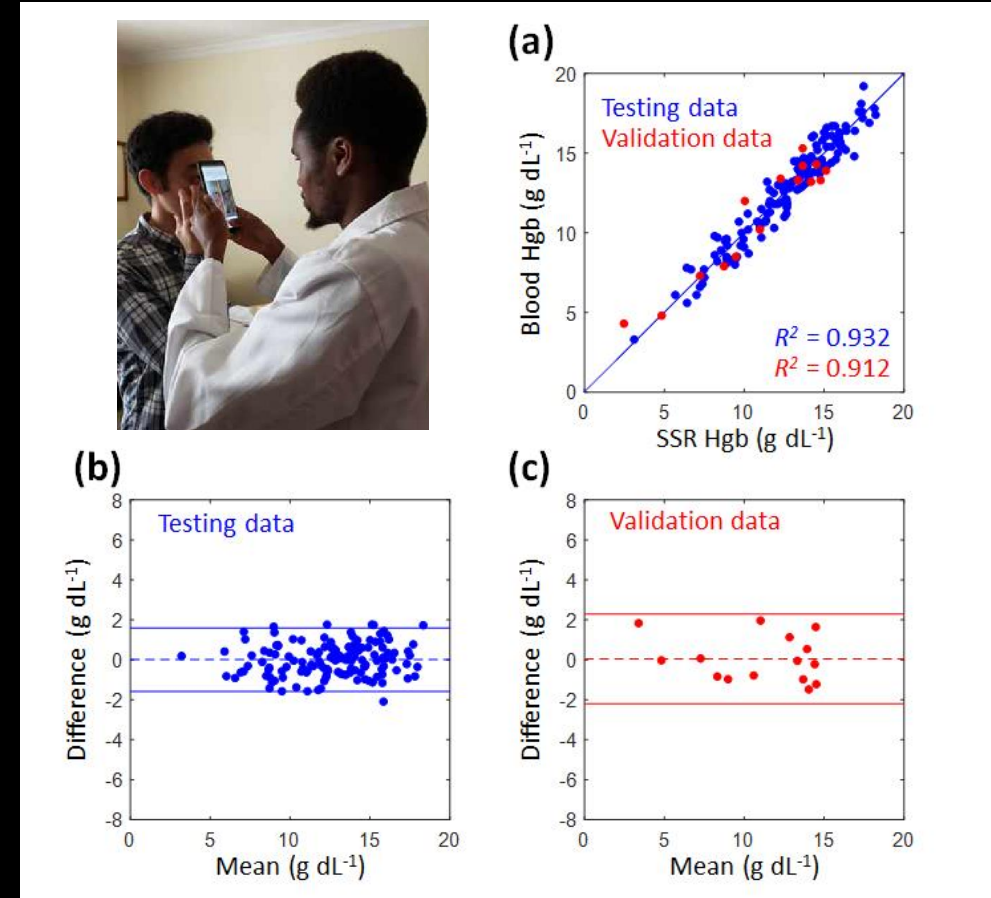
Reconstructed
hyperspectral data

Spectroscopic
and spatial analyses

Funding support and papers

Related funding support

- 2017: GEP I2D seed fund - mHealth tech
- 2017: NIH R21 - mHealth tech
- 2017: CTSI CTR - IUSM
- 2018: NIH supplement - Africa Global mHealth Research Institute
- 2018: USAID STIP - Biomedical Informatics
- 2020: NIH Technology Accelerator Challenge



Related papers

<https://doi.org/10.1364/BOE.8.005282>

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3369797

<https://doi.org/10.1364/OPTICA.390409>

Partnership and commercialization effort

Patent applications (under PCT conversion)

- US Provisional Patent Application No: 62945816
- US Provisional Patent Application No: 62945808

Startup

- HemaChrome

Partnership in the USA

- Partnering with AeXonis, focusing on marketing in the US.

Clinical study in the US

- Ongoing clinical study at IUSM (on hold due to COVID-19).

International collaborations

- Shrimad Rajchandra Hospital, Dharampur, India



- University of Rwanda – NIH Data Science Initiative (DSI) - Africa

Shah Lab – Social Impact Firestarter

Bill Arnold

Shah Lab Social Impact Firestarter

Introducing the program

- Goal
- Content
- Differences between this and Foundry Firestarter
- Audience (first, and following)
- Indications of interest/timing

Challenges & Considerations Working in the Field

Sonak Pastakia

Field Based Considerations for International Engagement

Sonak Pastakia, PharmD, MPH, PhD,
BCPS, FCCP

Professor, Purdue University College
of Pharmacy

Adjunct Professor, IU School of
Medicine

Visiting Lecturer, Moi University
School of Medicine



SEWA
Self Employed Women's Association

Proposals vs. Reality

Grant Proposals

Key overarching activities and specific activities	Months from baseline								
	-3-0	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21→
Open rural and urban clinics									
Innovate on community-based prevention and care									
➢ Develop and implement contextualized exercise programs for rural SEWA members through master trainers									
➢ Develop and implement novel cooking demonstrations through master trainers to teach community members healthier cooking strategies									
➢ Develop and implement Master Trainer based care delivery for acute illnesses									
➢ Develop and implement Master Trainer based care delivery for chronic diseases									
➢ Develop and implement portable clinical care in SEWA groups									
Fully operationalise clinics with POC diagnostics									
➢ Formalize tie-ups with commercial lab partners to fill the gaps in the lab needs (i.e. labs for acute illnesses, thyroid function tests, backup for other labs in the absence of POC, etc.)									
➢ Integrate POC labs into SEWA screening activities (primarily glucose ± HbA1c)									
➢ Integrate POC labs into SEWA clinics (Istat, HbA1c, Cholesterol)									

Reality





MOH-AMPATH Vision

Achieve optimal health and social well-being for the population of Western Kenya through improved access to services that promote health and wealth, prevent and manage disease, and provide high-quality care at all levels of the health care delivery system.

What is Population Health?

Population health is an integrated model of care delivery aimed at improving outcomes of health and social well-being by comprehensively addressing the biological, social, and structural determinants of health using a community-centered approach for a defined geographic population.

STRATEGIC OBJECTIVE

Maximize the Power of Community Groups

Create the maximum number of community groups within the model catchment and use them as an entirely new platform of healthcare delivery. This requires us to completely re-envision what healthcare can look like in rural populations.

Create a Seamless Care System

Create a seamless care system from village to tertiary center inclusive of a fully deployed electronic information system supporting care and self-correction.

Fully Partner with NHIF

Assist the National Hospital Insurance Fund (NHIF) in adapting the MOH/AMPATH care network into a fully functioning health insurance scheme responsive to the needs of the poor.

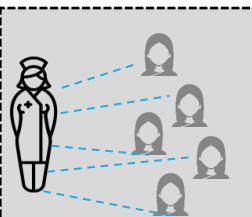

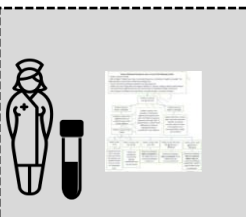

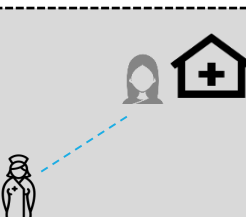

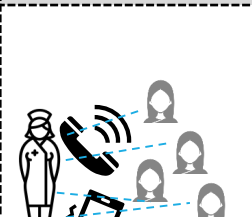
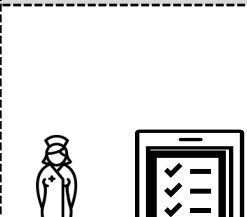

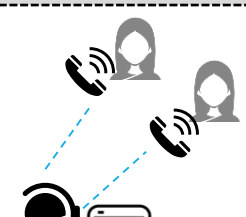
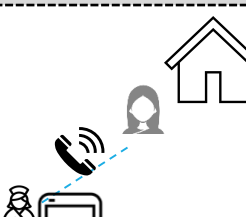
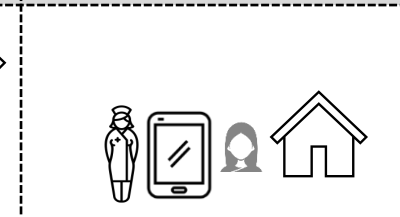


- Self Employed Women's Association (SEWA) is a trade union of 2 million women employed in the informal economy.
- SEWA has built sustainable and scalable solutions for several social problems of low-income populations: livelihoods, finances, training, advocacy and insurance, among others.
- **COVID disruptions are now the biggest threat we are trying to address**





Effective Care for NCDs + COVID

<p>In-person care</p> 						
<p>Original SEWA Model</p>	<p>Master Trainers spread messaging through community engagement</p>	<p>Master Trainers screen using point of care labs from Abbott</p>	<p>Protocols guide diagnosis</p>	<p>Master Trainers digitally track and ensure patient follow-up</p>	<p>Master Trainers ensure patients remain engaged in care</p>	<p>MT's eventually deliver medications and services</p>
<p>COVID-19 Additions</p>						
<p>Integration of Telemedicine</p>	<p>Master Trainers spread messaging through phone calls and text messaging</p>	<p>Master Trainers discuss symptom checklists and assist with screening options and referral</p>	<p>Referral to already established clinics and telemedicine physicians for diagnosis</p>	<p>Telemedicine physician staff provide advice to patients</p>	<p>Master Trainers follow-up with patients via phone or in person</p>	<p>Master trainers with PPE provide supplemental in-person education and adherence counseling as needed to reinforce health messaging</p>





https://indianactsi.org/news_/indiana-ctsi-and-iu-center-for-global-health-provide-funding-in-search-of-reciprocal-innovation/

Questions?

SPASTAKI@PURDUE.EDU

215.594.9414

Kenya Engagement Update

Diana Harbison

Generally



INDIANA UNIVERSITY



AMPATH
Consortium
Partners



Functionally





MOU

Non-binding!



Coordination Committee:

**Moi Dean School of Engineering,
Purdue GEPP**

Signed by:

Purdue Chief Corporate and Global Partnerships

Officer Dan Hirleman

Moi Vice Chancellor Isaac Kosgey

- Short and Long-term Faculty Exchange
- Undergraduate and Graduate Student Exchange
- Collaborative Research and Discovery, Learning, and Teaching and Engagement
- Other mutually agreed upon educational or research programs.

GEPP Coordination Efforts

Maintain communication with faculty/students working in Kenya.

AMPATH Team Leader representation.

Maintain a house for faculty to rent.

Seek partnerships and funding to support CoE work.

AMPATH Mexico: Benemerita Universidad Autonoma de Puebla (BUAP) Faculty of Medicine, Secretaria de Salud in Puebla Mexico and UT Austin Dell Medical School.

Conclusion:

- Thank you for joining us today.
- Questions/Comments/What you would like in our next meeting:
 - Pallavi Gupta – gupta604@purdue.edu
 - Rhonda Haan – rhaan@purdue.edu
- Shah Family Global Innovation Lab - <https://engineering.purdue.edu/GEP/ShahLab>
- Shah Labs IDEAS Series - <https://engineering.purdue.edu/GEP/ShahLab/IDEAS>