BIOENGINEERING FOR SUSTAINABLE DEVELOPMENT

GNB SCHOOL 2022

12-15 September 2022 – Brixen (BZ)

Arti Ahluwalia – University of Pisa

Leandro Pecchia – University Campus Bio-Medico Rome

Stefano Severi – University of Bologna

Carmelo De Maria – University of Pisa

https://www.grupponazionalebioingegneria.it/gnbevent/xli-annual-school-2022-biomedical-engineering-for-sustainable-development/

The school, a new paradigm for BME

- Reaching out beyond the classic confines of BME
- A new approach
- Based on SDGs

Aim of the school & learning objectives

Offer a different perspective on the design of medical technologies.

- fuctional and resilient in low-resource settings,
- towards sustainable development

Aim of the school & learning objectives

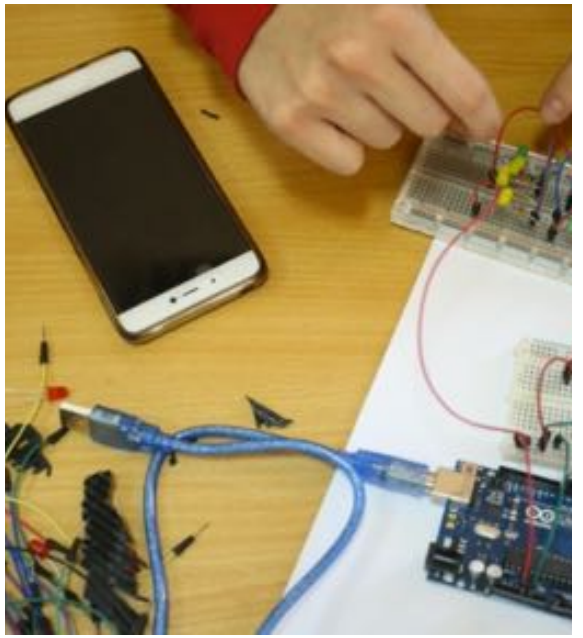
Define the terms

- Functional
- Resilient
- Low resource
- Sustainable

Aim of the school & learning objectives

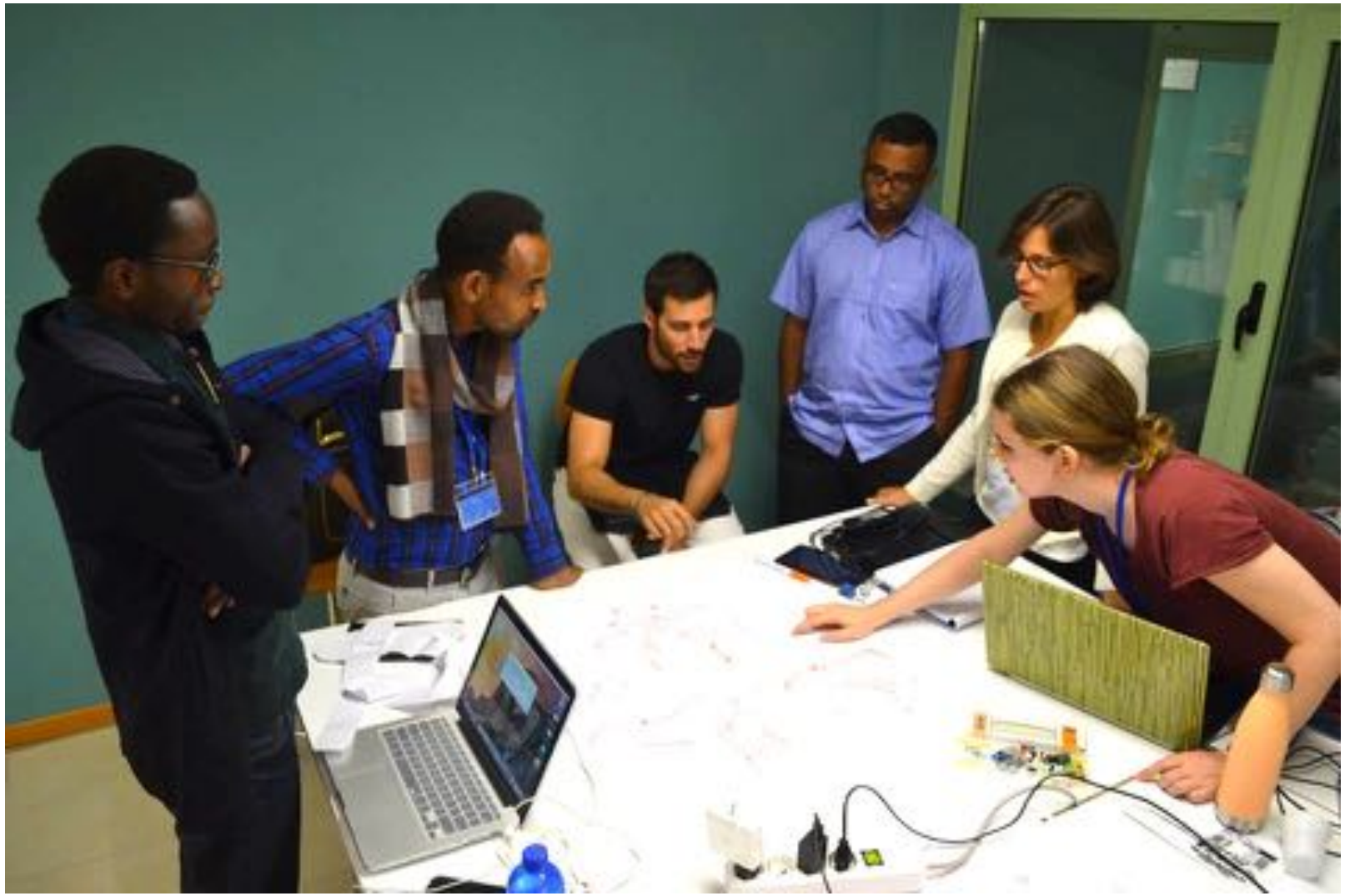
Learning together

Appreciate cultural/background/other diversity



Project

One week contest



Instructions for the contest

- Identify an unmet clinical need
- Develop a technological solution
- Present it on Thursday afternoon (5 minutes)!

- Teamwork
- Mentors will serve as guides
- Use the UBORA platform as guideline

Who are the mentors?

African Biomedical Engineering Consortium

Innovation through Education

Teamwork

Team compositions will be published on the teaching/learning platform.

Teams have been created to promote diversity:

- Competencies
- Gender
- Background

Evaluation criteria

- Identification of the clinical need
- Technical implementation
- Presentation and documentation

Technical program

Program at a glance

	Monday 12	Tuesday 13	Wednesday 14	Thursday 15
Morning	Needs assessment and life cycle of medical devices	Innovation (part 1)	Innovation (part 2)	Management of medical technologies
Afternoon	Case studies and group work	Case studies and group work	Case studies and group work	Final Presentation

Program of the day

Monday 12th

	Topic: Needs assessment and life cycle of medical devices	
Time	Topic	Speaker
9.00	Introduction: program and objectives of the school. Overview on global health	Arti Ahluwalia (University of Pisa, Italy)
9:30	Biomedical engineering and Sustainable development goals	Domenico Vito (Metabolism of Cities Living Lab, San Diego State University, California)
10.30	Break	
11.00	Life cycle of medical devices: regulations in a worldwide market	Carmelo De Maria (University of Pisa, Italy)
12:30	Keynote: Healthcare in low-resources settings and medicine of poverty	Angelo Stefanini (University of Bologna)
13:15	Break	
14:00	Needs assessment in low resources settings and the role of biomedical engineers	Philippa Makobore (University of Calgary, Canada)
15.00	Biomedical and clinical engineers' contribution during pandemics toward global health	Leandro Pecchia (University Campus Bio-Medico & University of Warwick)
16.00	Break	
16:30	Case study: in vitro diagnostics for malaria control	Valentina Mangano (University of Pisa)
17.30 – 18.00	Introduction to UBORA and formation of working groups	Carmelo De Maria (University of Pisa)

Program of the day

Tuesday 13th

	Topic: Innovation (part 1)	
Time	Topic	Speaker
9.00	Reverse and frugal innovation	Stefano Severi (University of Bologna)
9:30	Case Study: start-up companies for accessible healthcare	Caterina Giuliani (Corax), Alan Fabbri (IBD)
10.30	Break	
11.00	Key enabling design and manufacturing technologies for open-source medical devices	Andrés Diaz Lantada (Universidad Politecnica de Madrid)
12:00	Group work	
13:00	Break	
14.00	Case Study: AI for Pneumonia detection in LMICs	Katy Stokes (University of Warwick)
15:00	Case Study: Medical Device solution for Maternal Health	Gabriella Signorini (Polytechnic of Milan, Italy)
16:00	Case Study: Bambi – Ballon against (post-partum) maternal bleeding	Francesco De Gaetano (Polytecnic of Milan, Italy)
17.00	Break	
17.30 and beyond	Group work	-

Program of the day

Wednesday 14th

	Topic: Innovation (part 2)	
Time	Topic	Speaker
9.00	Use of smartphones for frugal innovation: guided hands on (Part 1)	Davide Piaggio (University of Warwick)
10.30	Break	
11.00	Use of smartphones for frugal innovation: guided hands on (Part 2)	Davide Piaggio (University of Warwick)
12:30	The Right to the access to medical technologies	Valentina Calderai (University of Pisa)
13:15	Break	
14:00	Implementing a clinical study in low resources settings	Daniel Atwine (Mbarara University of Science and Technology
15.00	Safety and security in smartphone applications	Giuseppe Fico (Universidad Politenica de Madrid)
16.00	Break	
16.30 and beyond	Teamwork	

Program of the day

Thursday 15th

	Topic: Management of medical Technologies	
Time	Topic	Speaker
9.00	Management and maintenance of medical technologies in low resources settings.	Ernesto Iadanza (University of Siena)
9:50	AI for medical device maintenance and metrology in LMICs: the case of Bosnia and Herzegovinian	Dr Lejla Gurbeta Pokvic (International Burch University)
10.30	Break	
11:00	GNB award ceremony	
12.30	Keynote: Increase the access to medical devices	Adriana Velazquez Barumen Daniela Rodriguez (WHO)
13:00	Break	
	The activities of EAMBES and IFMBE	Ratko Magjarevic (University of Zagreb) Jari Hyttinen (Tampere University)
14:00	Group presentation	
16:30	Break	
17.00 – 17.30	Closing ceremony and final remarks	

Thanks to support from

The UBORA Association

Assessment of learning outcomes

- Please fill this anonymous questionnaire (10 minutes), which will help us in assessing the effectiveness of the school
- https://forms.gle/BeFbbWzCLpLnQT4k6