



## Scope

Projects must focus on a specific cancer type that is preventable or treatable in the proposed LMIC setting and must show promise to deliver medical utility for improved health outcomes.

All proposed devices must adapt, apply, engineer, and validate existing or emerging technologies or assays into resource-appropriate tools for detection, imaging, screening, in vitro diagnosis, or treatment of cancers in LMICs.

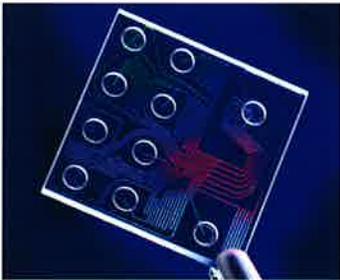
### ***Specific Required Attributes for proposed technologies***

- Portable;
- Operable in locations with limited or no medical infrastructure;
- Manufacturable at low cost and with low-cost disposables;
- Simple to operate by locally trained healthcare staff;
- Provide rapid results (for diagnostic technologies);
- Sustainable and affordable by local providers (either low enough in cost to easily replace, easily replaceable parts/ease of repair, or durability)

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## Overview

- Trans-NCI effort
  - includes DCTD, DCCPS, DCB, DCP, CRCHD, CSSI, and OHAM.
  - PDs from DCTD, DCCPS, and DCP
- NCI has funded 6 UH2 awards while NIBIB has funded 1
- Second round currently in review.



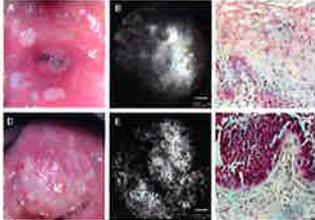
## Critical Elements

- Two-phase cooperative agreement (UH2/UH3). RFA reissued yearly over three years.
- Collaboration across disciplines
  - Engineers/developers
  - Cancer care professionals
  - Experts in global health delivery
  - Business
- **Phase I (UH2) - two years:**
  - Demonstrate clinical potential in a global health setting
  - \$500K per grant per year
- **Phase II (UH3) - three years:**
  - Validate device in global health setting
  - \$1M per grant per year
- **Progression from UH2 to UH3:**
  - Grantee must meet specified milestones
  - Milestones reviewed by NCI program staff.

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## Funded Projects: Cervical Cancer Prevention and Diagnosis

- **Adapting the Cepheid GeneXpert test to detect HPV**  
(Louise Kuhn, Columbia)
  - Country proposed for UH3: South Africa
  - Technology: PCR
  - This project will determine if a diagnostic that detects diverse HPV genes can be adapted to distinguish invasive carcinoma from inconsequential cervical neoplasms;
- **High resolution micro-endoscopy for cervical cancer diagnosis**  
(Kathleen Schmeler, MD Anderson and Rebecca Richards-Kortum, Rice)
  - Country proposed for UH3: Brazil
  - Technology: Optical Endoscopy
  - The device will produce real-time images of the cervix at very high resolution for real-time diagnosis of cervical cancer.

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## Funded Projects: Cervical Cancer Treatment

- Adaptation and testing of the CryoPen cryotherapy device for treating cervical neoplasia for use in LMICs

(Miriam Cremer, Magee-Women's Research Institute)

- **Country proposed for UH3:** Peru & Columbia
- **Technology:** Cryotherapy
- The project is to adapt the CryoPen into an inexpensive and easily transportable device (powered by car batteries).



- Assessing the performance, safety and efficacy of a new cryotherapy device using liquid CO2

(Jean Anderson, Hopkins)

- **Country proposed for UH3:** Philippines
- **Technology:** Cryotherapy
- The goal of this project is to determine whether a low cost cryosurgery device driven by liquid CO2 can treat cervical dysplasia.



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## Funded Projects: Oral Cancer Treatment, HCC Prevention,

- Low-cost enabling technology for image-guided photodynamic therapy of oral leukoplakia

(Jonathan Celli and Tayyaba Hasan, Massachusetts General Hospital)

- **Country proposed for UH3:** India
- **Technology:** Battery-powered PDT
- This project will bring a well-established photodynamic therapy and activate it by low cost commonly available battery technology to treat premalignant lesions.



- A low-cost test for hepatitis C virus to identify patients at risk for developing hepatocellular carcinoma

(Robert Murphy, Northwestern University)

- **Country proposed for UH3:** Nigeria
- **Technology:** RNA Viral Load Test
- The device developed in this project will aid in identifying patients at risk of developing HCC, and in monitoring infection treatment outcomes.

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### Funded Projects: Breast Cancer Detection/Diagnosis

- Low-cost, portable computer-aided detection and diagnostic (CADD) tools for non-invasive screening of breast cancer patients  
(Susan Love, Dr. Susan Love Research Foundation)
  - Country proposed for UH3: Mexico
  - Technology: Ultrasound/CADD
  - Project includes algorithm development combined with portable ultrasound. Goal is to enable minimally-trained health care workers to hold the probe over the palpable lesion and tell the woman whether she should obtain a biopsy.



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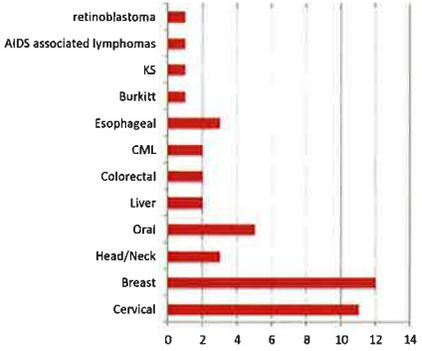
### Round 2

- 45 applications are in review.
- 6 applications from foreign institutions.
- Funding fall 2015.
- Will join steering meeting at an in-person PI meeting in winter 2016.

**Cancer Site**

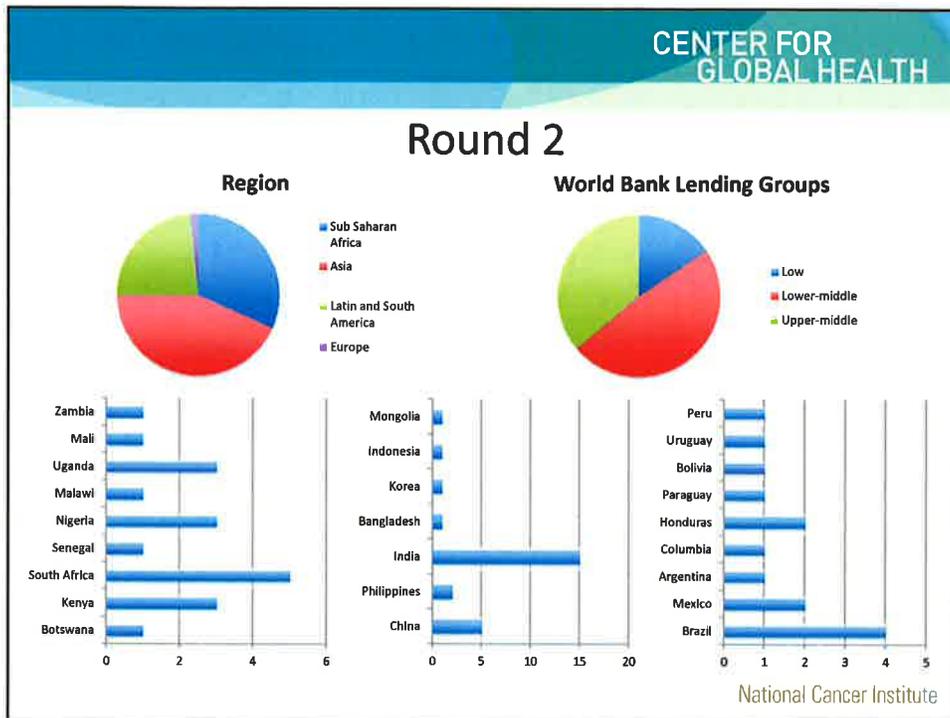


- Cervical
- Breast
- Head/Neck
- Oral
- Liver
- Colorectal
- CML



Cancer Site	Number of Applications
retinoblastoma	1
AIDS associated lymphomas	1
KS	1
Burkitt	1
Esophageal	2
CML	2
Colorectal	2
Liver	2
Oral	3
Head/Neck	4
Breast	11
Cervical	12

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## Ongoing Efforts

- **Three rounds of funding**
  - 7 UH2 Awards Per Round (6 NCI, 1 NIBIB funded)
  - 3 UH3 Awards Per Round (All NCI funded)
  - Steering committee peaks at 17 PIs
- **Steering Committee**
  - Investigating routes for knowledge sharing and cooperation
- **Process Evaluation**
  - Portfolio analysis:  
*This space has expanded a great deal since inception of the program.*
  - Submission process/review:  
*The application length, required supplementary material, and the use of the special emphasis panel need to be looked at.*
  - Coverage:  
*Are we hitting the key cancer sites, are projects distributed in a geographically appropriate manner, are key technologies not being adequately targeted?*
  - Mechanism:  
*Is the UH2/UH3 mechanism having the desired outcomes?*

Funding Round	Phase	9/2014-8/2015	9/2015-8/2016	9/2016-8/2017	9/2017-8/2018	9/2018-8/2019	9/2019-8/2020	9/2020-8/2021
1	UH2	X	X					
	UH3		X	X	X	X		
2	UH2		X	X				
	UH3			X	X	X	X	
3	UH2			X	X			
	UH3					X	X	X



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