

Reducing technology cost and increasing availability of CD4 tests in rural communities

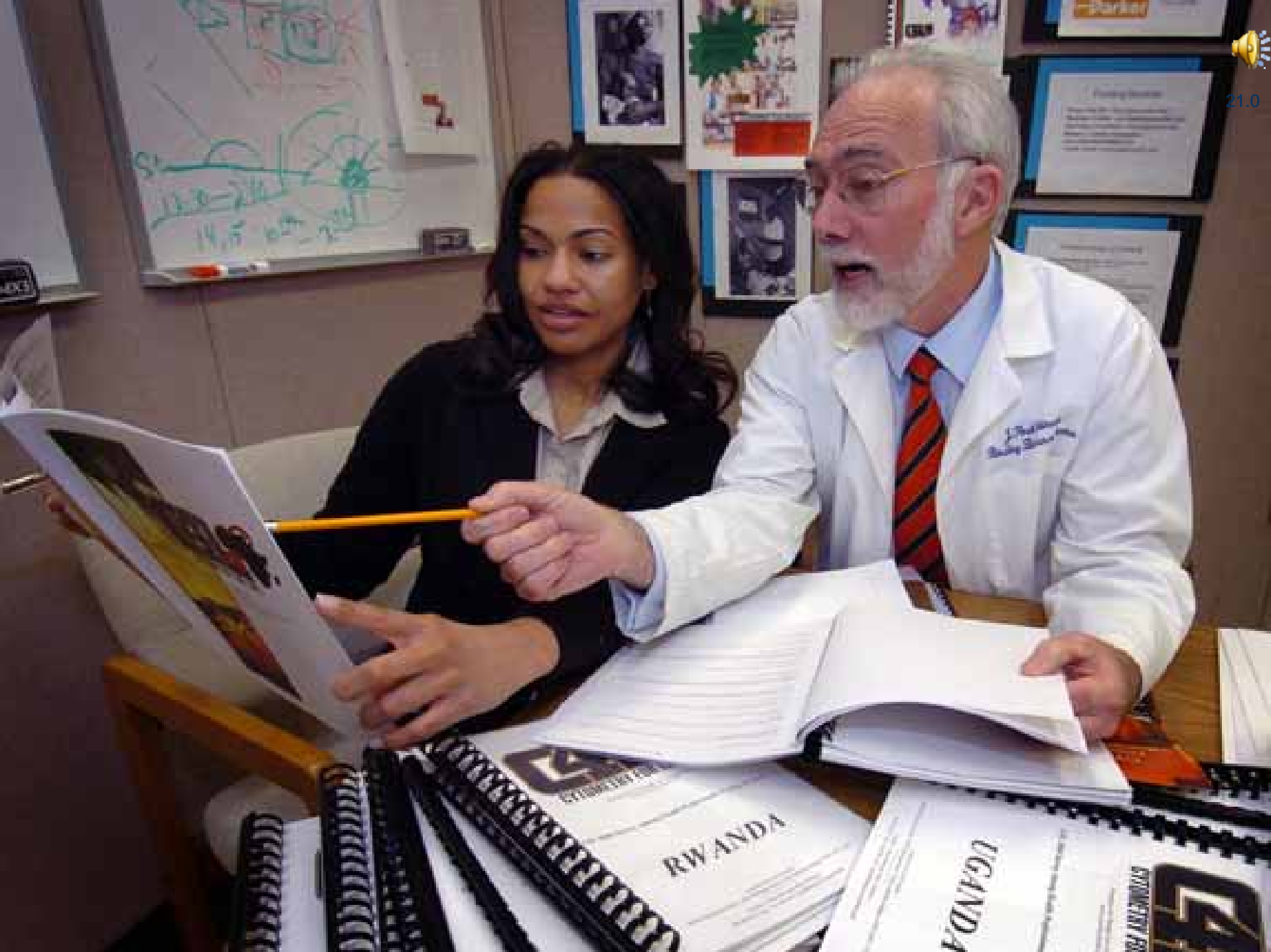
The Cytometry for Life Program at Purdue University
Lova Rakotomalala
Hildred Rochon

J. Paul Robinson, PhD
SVM Endowed Professor of Cytomics
Director, Purdue University Cytometry Laboratories
Past-President, International Society for Analytical Cytology

Email: jpr@flowcyt.cyto.purdue.edu

Bindley Bioscience Center,
Discovery Park, Purdue
University, West Lafayette,
IN, USA



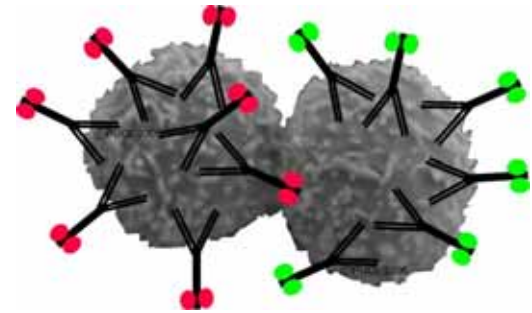


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Evaluation of CD4

- CD4-T cells are white blood cells
- They are destroyed by the HIV virus
- Without CD4-T cells your immunity is destroyed
- Normal levels of CD4 are 500-1500/microliter
- <200 CD4/uL you must go on therapy
- A CD4 test will occur every 3-4 months for patients on therapy



The Bottom line:

3 Ready access to CD4 counts is an absolute necessity in Africa

What is the problem with the present system?

- Tests are still expensive
- Require complex, expensive instruments
- All current tests require significant infrastructure
- Tests can take several days to get results



The Bottom line:

4

We do not have a low cost, easy to use solution for CD4





The current “best-practice” model

- Large central labs in larger cities or towns
- Use complex, expensive instruments
- Need highly trained technicians
- Must ship all the samples to these sites
- Results have to somehow get back to patients



The Bottom line:

5

It may work for cities but does it really work for rural areas?

Three fundamental problems...

1. Exclusively provides diagnostics to the cities and those institutions with extensive infrastructure
2. Concentrates the testing frequently overloading the systems
3. Over half of the candidates for testing, fail to gain access to simple diagnostics

The Bottom line:

Who will argue that this system is successful?



“Next-Gen” – solutions?

- “Lab-on-a-chip” – an instant solution to CD4?
- Micro-Chips – an instant solution to CD4?
- Nanomedicine – an instant solution to CD4?
- Hand-Held-Device - an instant solution to CD4?

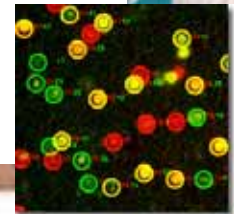


Austin American-Statesman



Oct 14, 2004: LabNow Inc., a company with a promising device to help monitor AIDS patients, has raised \$14 million from a wide range of investors, including billionaire George Soros.

"UT already has spent about \$18 million on research over eight years to develop the technology. Nonprofits, including the Bill and Melinda Gates Foundation and the Doris Duke Charitable Foundation, helped finance the development. The Gates foundation gave \$2 million; the Duke foundation gave \$200,000."

"Hawkins said he hopes to have the device rolling off the assembly line by July 2005 and to have 20,000 made in the first year. Production will be handled by a contract manufacturer."



What is reality?

Search Term	 Public Perception	 Real Science
<i>Next Generation Technology</i>	194,000,000 Hits on the topic	449 Actual scientific reports
<i>Low Cost Device</i>	31,400,000	2938
<i>CD4 Measurement</i>	902,000	1978
<i>Low Cost CD4</i>	573,000	120
<i>Low Cost Diagnostics</i>	5,370,000	144 Actual scientific reports
<i>CD4 counts</i>	1,200,000	13,909

There is a big difference between perception and reality when it comes to promised technology solutions for Africa!!

What are we proposing?

Fundamental Principles

- Use the present well-accepted methods
- Innovate with consumer-type products
- Devise correct algorithm for CD4 quantification
- Provide a point-of-care –real time result
- Manual operation - easy to use and robust

Achievement so far:

- Reduced size
- Reduced complexity
- Proof of principle
- Simplicity of operation
- Established chemistry

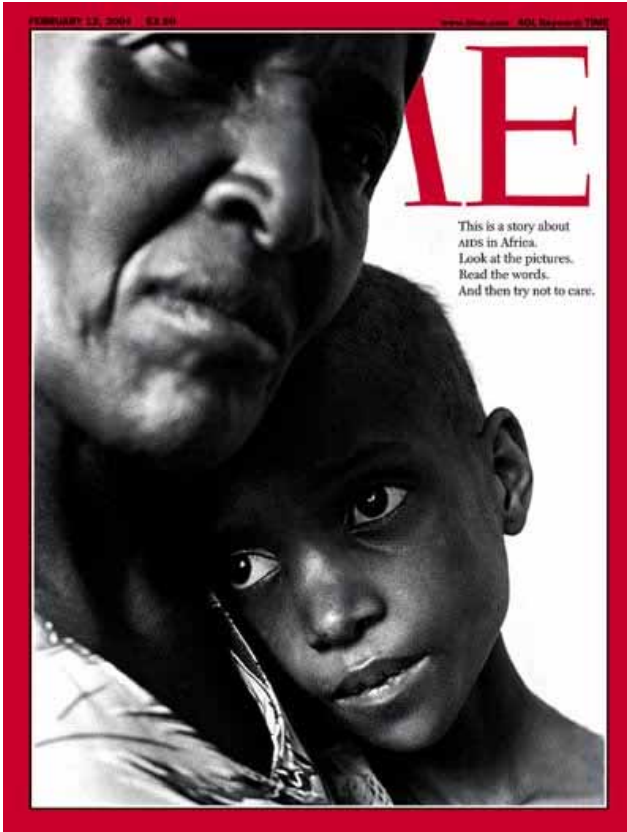


Early C4L prototype

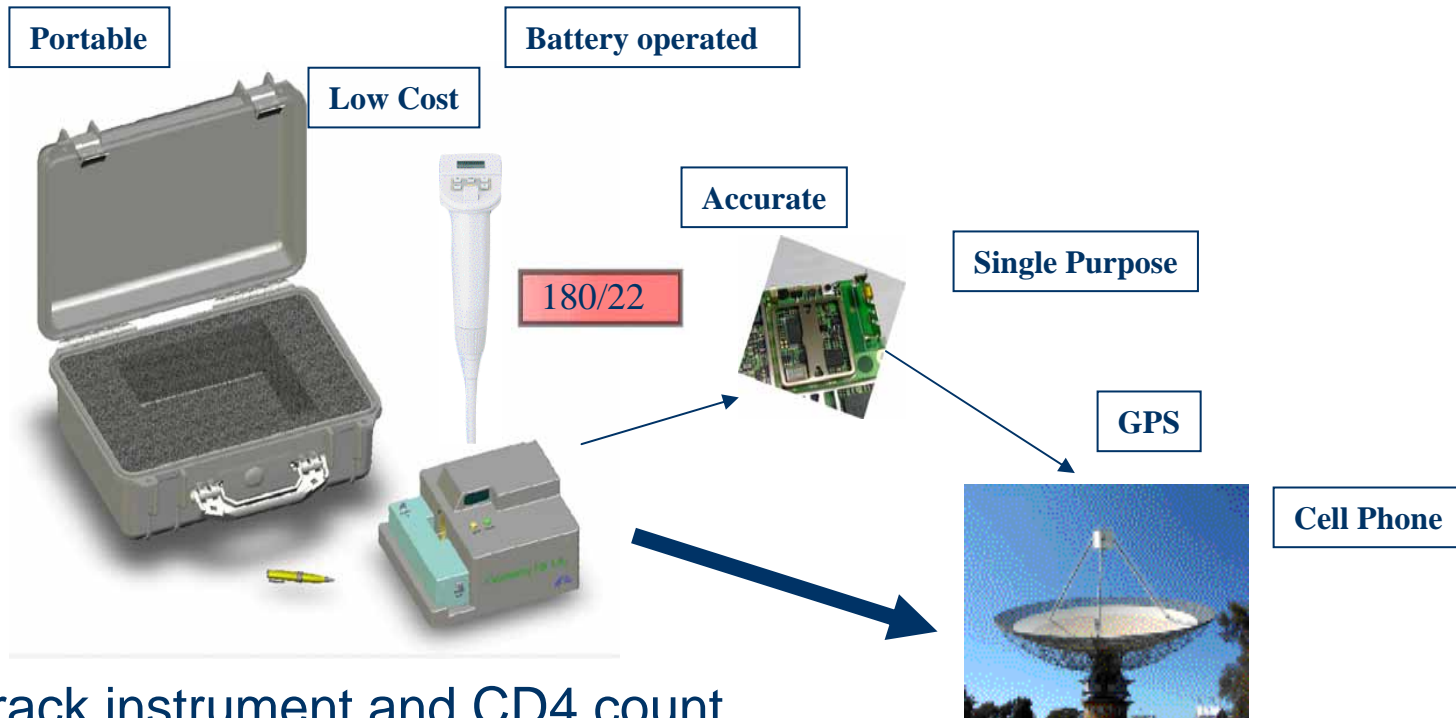


Point of Care (test) solution

- Take the instrument to the patient
- Provide immediate results
- Treat the patient



The C4L technology



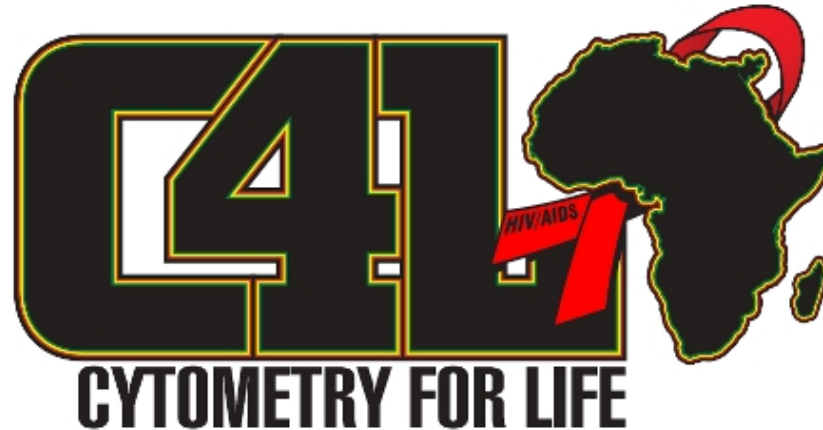
- Ability to track instrument and CD4 count remotely for epidemiological purposes
- Identify areas of therapeutic need
- Potential for evaluation of drug resistance

This simple instrument could be built today using well understood methods, chemistry and applications.





Cytometry for Life



- A program to deal only with CD4 testing
- Create a low cost instrument **ONLY** for CD4
- Make it small, robust and easy to use
- Focus on ***Point-of-Care*** testing

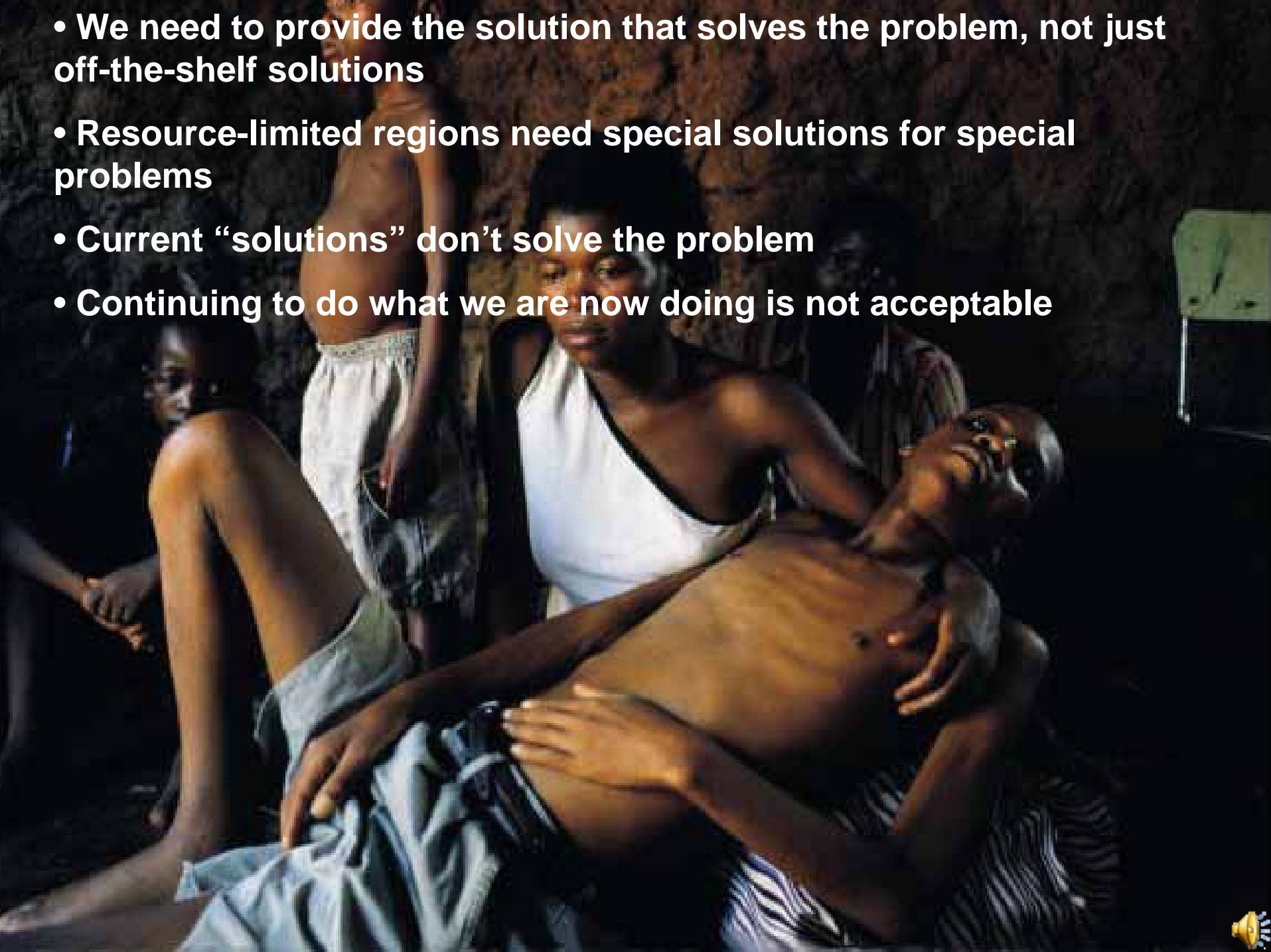
How can you help us to implement this program?

- Convincing funding bodies to address present needs, not just future ideas
- Next-gen tools are important – but almost all are many years from realistic implementation
- Talk to some of our staff and let them know how you can participate
- Help us to make sure that we are addressing the real needs of rural communities

....many HIV/AIDS patients in rural areas do not have the luxury of waiting for next-gen technologies to arrive....



- We need to provide the solution that solves the problem, not just off-the-shelf solutions
- Resource-limited regions need special solutions for special problems
- Current “solutions” don’t solve the problem
- Continuing to do what we are now doing is not acceptable



The *Cytometry-For-Life* team



J. Paul Robinson & Gary Durack

C4L Founders



Hildred Rochon

National Coordinator



Lova Rakotomalala

Postdoctoral Fellow

And the many volunteers helping to make this project a reality in Africa

*"Don't reinvent the wheel,
just realign it"*



www.cytometryforlife.org





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CLIA

A black silhouette of the African continent with a red ribbon draped across it. The ribbon has the text "HIV/AIDS" written on it in white.

CYTOMETRY FOR LIFE

An international consortium of scientists working to create solutions for those in need

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Through Low-Cost Diagnostics
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