Towards Smart, Next Generation Pregnancy Diagnostics

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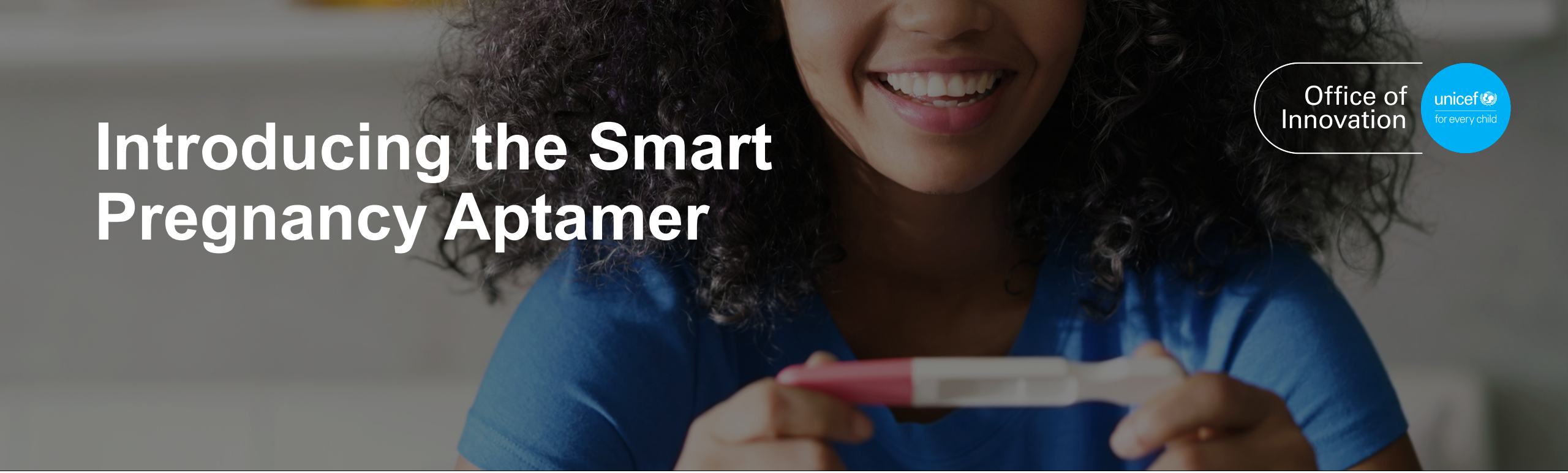

Introducing the Smart Pregnancy Aptamer

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Breakthrough innovation developed through unique partnership between UNICEF Office of Innovation and the Biotechnology Innovation Centre of Rhodes University.

If used to create a smart pregnancy test, this bio-engineered aptamer for the pregnancy hormone has the potential to save countless lives by making pregnancy testing more affordable, transportable and accurate, enabling early antenatal care for women.

Potential for major advancement in pregnancy testing for both affluent and poor populations worldwide.

Showcases UNICEF's commitment to cause-related innovation through private and public sector partnerships aimed at helping poor and under-served children and families.

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Why would an aptamer-based diagnostic test be different?

Utilizes chemically synthesized antibodies, called aptamers, to replace traditional antibodies derived from animals and cell or tissue cultures.

Applicable across a wide range of diagnostics and treatments.

Dramatically reduces cost and complexity of manufacturing and distribution.

More stable than antibodies with a longer shelf life; greatly reduces batch-to-batch variation.

Highly accurate and resistant to temperature and humidity, making aptamer-based tests a breakthrough in serving poor and remote locations around the world.

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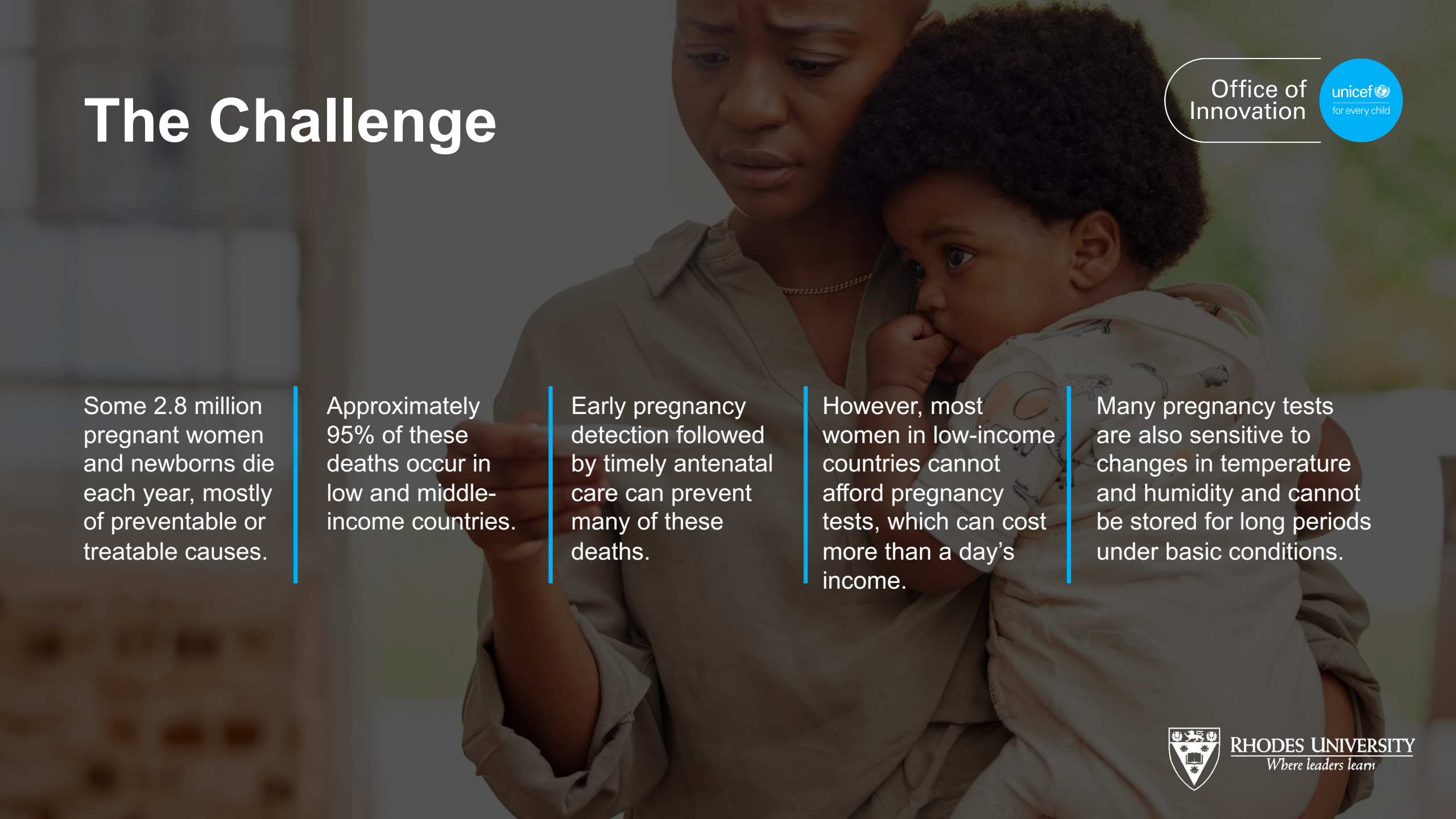
The Challenge



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Some 2.8 million pregnant women and newborns die each year, mostly of preventable or treatable causes.

Approximately 95% of these deaths occur in low and middle-income countries.

Early pregnancy detection followed by timely antenatal care can prevent many of these deaths.

However, most women in low-income countries cannot afford pregnancy tests, which can cost more than a day's income.

Many pregnancy tests are also sensitive to changes in temperature and humidity and cannot be stored for long periods under basic conditions.

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The Innovation Journey

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1

UNICEF Office of Innovation is committed to aligning with diverse partners to boldly explore and scale innovative approaches and technologies to deliver equitable impact and opportunity for every child today, and an accelerated pace of change for generations to come.

2

Co-creates, collaborates and partners globally to solve challenges across climate change, gender equality, health, learning, mental health, water and sanitation etc.

3

In 2014, UNICEF identified the potential of biotechnology to overcome lack of access to affordable diagnostics, like pregnancy tests, in developing countries

4

Partnered with and provided funding to the Rhodes University Biotechnology Innovation Centre (RUBIC) in South Africa for the development of the Smart Pregnancy Aptamer (SPA) and other diagnostic aptamers.

5

Collaborated with Harvard Consulting on Business and the Environment to explore potential global markets and routes to maximize equitable global access to Smart Pregnancy Aptamers

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Bringing a Pregnancy Aptamer to Markets Worldwide

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UNICEF and Rhodes University share the vision of making pregnancy tests available to every woman in the world.

They intend to work with a wide range of visionary partners in the private sector, non-profits, academia and beyond to achieve this vision to develop and bring tests to market at scale.

Tests using aptamers (instead of antibodies) have the added benefit of being manufacturable in locations closer to in-need populations if this is an attractive model.

Tremendous opportunity for companies to develop a new pregnancy test using the smart pregnancy aptamer for markets across high-income and low-income countries globally—pregnancy tests estimated $1.3 billion (US) market.

The shared vision for this work is for pregnancy tests to be smarter, affordable and accessible to all women.

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