From: jeffrey E. <jeevacation@gmail.com>
Sent: Wednesday, October 8, 2014 10:33 PM
To: A Barrett
Subject: Re: Confidential: Early detection of Ebola

ill try, also i started the conversatoin with =ark about splitting up the interest, he is open to the idea,=C2 but wanted someone smart to advise. that meanss he does't =ant to pay for advice.

On Wed, Oct 8, 2014 at 6:28 PM, A Barrett [redacted]&=t; wrote:

=i Jeffrey,

Any interest in helping on this. I kno= last time you and Francis did not hit it off. Nevertheless he has been su=cessful as a scientist and is really not a "people' person. =A0

He claims he can develop the tools to diagnose=Ebola before it becomes symtomatic.

Ant=ony Barrett

Begin forwarded message:

<=div>

From: Francis Barany [redacted]a>>
Date: October 8, 2014 at 6:06:32 PM EDT
To: An=hony Barrett [redacted]
Cc: Michael Gargano [redacted]
>=br>Subject: Confidential: Early detection of Ebola

</=iv>

Dear Anthony,

I really appreciate your willingness to find a potential pathway to Bi=l Gates and the Gates Foundation.

By way of introduction, I have been a Professor at Weill-Cornell for t=e last 30 years, and am best known for having invented the Ligas= Chain Reaction (LCR) and the Universal Array. I hold 46 issued=US patents, a number of which have led to commercial tests to diagnose genetic diseases (i.e. cystic fibrosis, MLPA tests, =ANSR for NIPD of trisomy), and identify diseases using DNA microarray= and targeted Next-Gen sequencing. Earlier this year, I re=eived the IFCC Award for Significant Contributions in Molecular Diagn=stics.

I have been collaborating with Dr. Linnie Golightly of our Center for =lobal Health/Infectious Disease Division for the past decade, wo=king together closely to develop multiplexed PCR-LDR assays for Categ=ry A

Biothreat agents, including all the major viral hemorrhagic fever viruses (VHF; ebolavirus, marburgvirus Crimean Cong= hemorrhagic fever virus, Lassa fever virus, Rift Valley fever v=rus, Dengue virus, and Yellow fever virus). (Kindly see b=low abstract of manuscript just being submitted). In addition, =n collaboration with Professor Soper at UNC, we have been building=A0micro-fabricated devices to rapidly detect pathogens.

Most recently, we have begun designing micro-fabricated devices that w=ll allow for electronic detection, obviating the need for expens=ve hardware used in most fluorescent detection schemes (i.e. Taqman a=says). As such, we are poised to combine these technologie= for rapidly identifying and providing quantitative viral load fo= all the VHF, Variola, Malaria or other Category A pathogens directly=from a drop of blood, with the next level of such devices suitab=e for working in developing countries, and may be powered and run by a cell phone or smart device.

- Current CDC approved EZ1-RT-=CR Taqman assay has LOD of 5,000 PFU/ml. This works when patient is=C2=febrile, i.e. has overt symptoms and may be contagious.
- Next level of assay needs to=be > 100-fold more sensitive. We know how to address this issue. • This would allow for identif=cation of individuals with early viral replication in their blood =80=before they are contagious, so they may be isolated, and further= early detection may improve outcomes.

Would your contacts be able to help us, so in turn we may help protect=our country?

Most appreciated,

Francis & Linnie

Dr. Francis Barany
Dept of Microbiology & Immunology
Box 62 Rm B-406
Weill Cornell Medical College
[redacted]
Linnie Golightly, MD
Associate Professor of Clinical Medicine
and Microbiology & Immunology
Center for Global Health
Division of Infectious Diseases
Weill Cornell Medical College
[redacted]

A Multiplex PCR/LDR Assay for the Simultaneous Identification of =ategory A Infectious Pathogens: Agents of Viral Hemorrhagic Fever and=Variola Virus

Das S.1, Rundell M.S.2, Mirza A.H.2, Pingle M.R.2, Shigyo K.1, Garriso= A.R.3, Paragas J.4, Smith S. K.5, Olson V. A.5, Larone D.H.2, 6= Spitzer E.D.7, Barany F.2 and Golightly L.M.1, 2

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6. Department of Pathology and Laboratory Medicine, Weill Medical Coll=ge of Cornell University, New York, NY
7. Department of Pathology, Stony Brook University Medical Center, Sto=y Brook, NY

ABSTRACT

CDC designated category A infectious agents pose a major risk to natio=al security and require special action for public health pr=paredness. They include viruses that cause viral hemorrhagic fe=er (VHF) syndrome as well as variola virus, the agent of smallpo=. VHF is characterized by hemorrhage and fever with multi-organ=C2�failure leading to high mortality and morbidity. Smallpox,=a prior scourge, has been eradicated for decades making it a par=icularly serious threat if released nefariously in the essentially no=-immune world population. Early detection of the causative agents =nd ability to distinguish them from other pathogens is essential to=C2�contain outbreaks, implement proper control measures and prevent=morbidity and mortality. We have developed a multiplex det=ction assay that uses several species-specific PCR primers to generate ampl=cons from multiple pathogens; these are then targeted in a ligas= detection reaction (LDR). The resultant fluorescently-lab=led ligation products are detected on a universal array enabling simultaneous identification of the pathogens. The assay wa= evaluated on 32 different isolates associated with VHF (ebolavirus,=C2�marburgvirus Crimean Congo hemorrhagic fever virus, Lassa fever =irus, Rift Valley fever virus, Dengue virus, and Yellow fever virus) as well as variola virus and vaccinia virus (the agent of smal=pox and its vaccine strain, respectively). The assay was a=le to detect all viruses tested including 8 sequences representative=C2�of different variola virus strains from the CDC repository. It does not cross react with other emerging zoonoses such =s monkeypox virus or cowpox virus, or six flaviviruses tested (St. Lo=is encephalitis virus, Murray Valley Encephalitis virus, Powassa= virus, Tick-borne encephalitis virus, West Nile virus and Japanese encephalitis virus).

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