

# Transcript

## Reagent Selection Methodology for a Novel Explosives Detection Platform

---

### TRANSCRIPT

(Image of Marvin Warner, Ph.D.)

**Marvin Warner, Ph.D.—Chemist:** My name is Marvin Warner, and I am a research scientist at Pacific Northwest National Laboratory.

(Image of researchers in laboratory settings; “ANTIBODIES” appears)

**Warner:** Currently, I am researching the individual pieces of antibodies to set up a chemical reaction that will give off light just by mixing our reagents together with a sample that contains an explosive molecule.

(Animation of bacteria inside an organism; antibodies rendering bacteria inactive)

**Warner:** Basically, the immune system is designed such that when you have a foreign invader or something like a virus or bacteria, it is designed to mobilize cells within a given body that are specifically designed to target the invader, render them basically inactive, or neutralize them. This keeps any type of foreign body or invader from causing any adverse affects within the organism.

(Animation of antibodies being reduced for specific bacteria; cutaway to animation of “TNT” injection, which is rendered inactive by antibodies)

**Warner:** You can exploit this immune system behavior to basically produce antibodies that are specific for targets of interest. An explosive protein conjugate is injected into the organism, the immune system kicks in, antibodies are produced against the foreign body in order to basically clear that foreign body from the organism.

(Animation of genetic coding; footage of chemical processing)

**Warner:** We isolate the cells that basically encode for those specific proteins that are designed to clear the foreign bodies from the organism, and then we take that genetic information and produce the proteins external of the organism.

(Animation of potential “wand” platform and its use at vehicle checkpoint)

**Warner:** Basically, development the detection platform that we have in mind would have a great deal of effect for deployment at distant outposts or checkpoint-type monitoring where you would have very little to no external power.

(Animation of how “wand” platform could work on a vehicle)

**Warner:** You could basically take a sample off of a surface, stick it into a handheld system or some kind of container that contains your protein reagents. You would then push a button to release the reagents, and as the proteins come together in the presence of the explosive, you would see a light that would not otherwise be given off in an absence of the explosive.

# Transcript

## Reagent Selection Methodology for a Novel Explosives Detection Platform

---

**(“Find Better Sensitivity Better Functionality” appears; “wand” and other detection systems appear)**

**Warner:** I think we’re going to find better sensitivity and better functionality overall by using a low-power detector. Compared to the conventional method of pulling a laser and a detector system and a computer and everything else into the field, you have a much smaller power footprint.

**(Close view of chemical compound; researchers collaborating)**

**Warner:** To have the understanding of all the nuances and technologies that are necessary to form reagents that have been postulated in the literature and do so in a somewhat nonlinear or nonconventional path can only happen with a team that you could form at a place like PNNL where we have all the different multidisciplinary components.

# # #