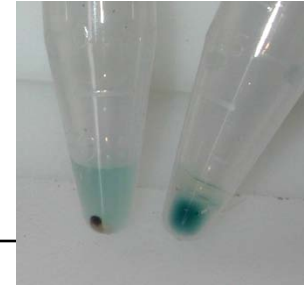


# Biomolecule Detection by Super ParaMagnetic Capture



This method uses super paramagnetic particles to capture and concentrate biomolecules and detect their presence using labeled antibodies

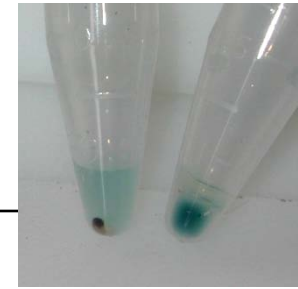


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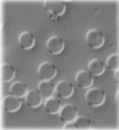

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# Detection by Capture



## Requirements

- Plastic tube.
- Magnetic reagent 
- Beads with capture antibodies attached. 
- A Magnet 



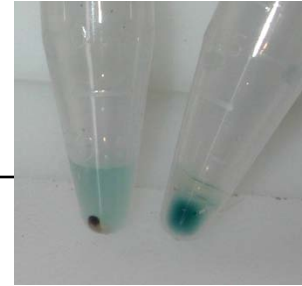
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# Detection by Capture

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- No instrumentation required
- Fast and easy to use- no hazardous reagents
- Hardware- tubes, pipettes and a magnet
- Visual interpretation of results



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# Making Magnetic Antibodies

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## Requirements for a magnetic reagent

- Super paramagnetic particles
  - Aggregates only in a magnetic field
  - Size range ~50-100 Å
  - Surface charge attaches biomolecules



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# Making Magnetic Antibodies

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## Step One

- Add magnetic reagent to a solution of mixed biomolecules, which may include the target molecule (i.e. what we want to detect)
- Do a magnetic pull down, decant the unbound magnetic particles. At this point there is a mixed population of biomolecules with magnetic particles attached.



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# Adding Capture Antibodies

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## Step Two

- Resuspend the biomolecule/magnetic particle complex with wash solution
- Add capture antibodies which are attached to (blue) plastic beads. (N.B. Other labels can be used)
- Allow time for binding



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# Detection

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## Step Three

- Place a magnet  on the side of the tube.
  - If positive, a blue band made up of the target magnetic particles bound to the blue plastic capture beads will appear
  - If negative, a small brown band made up of magnetic particles will appear

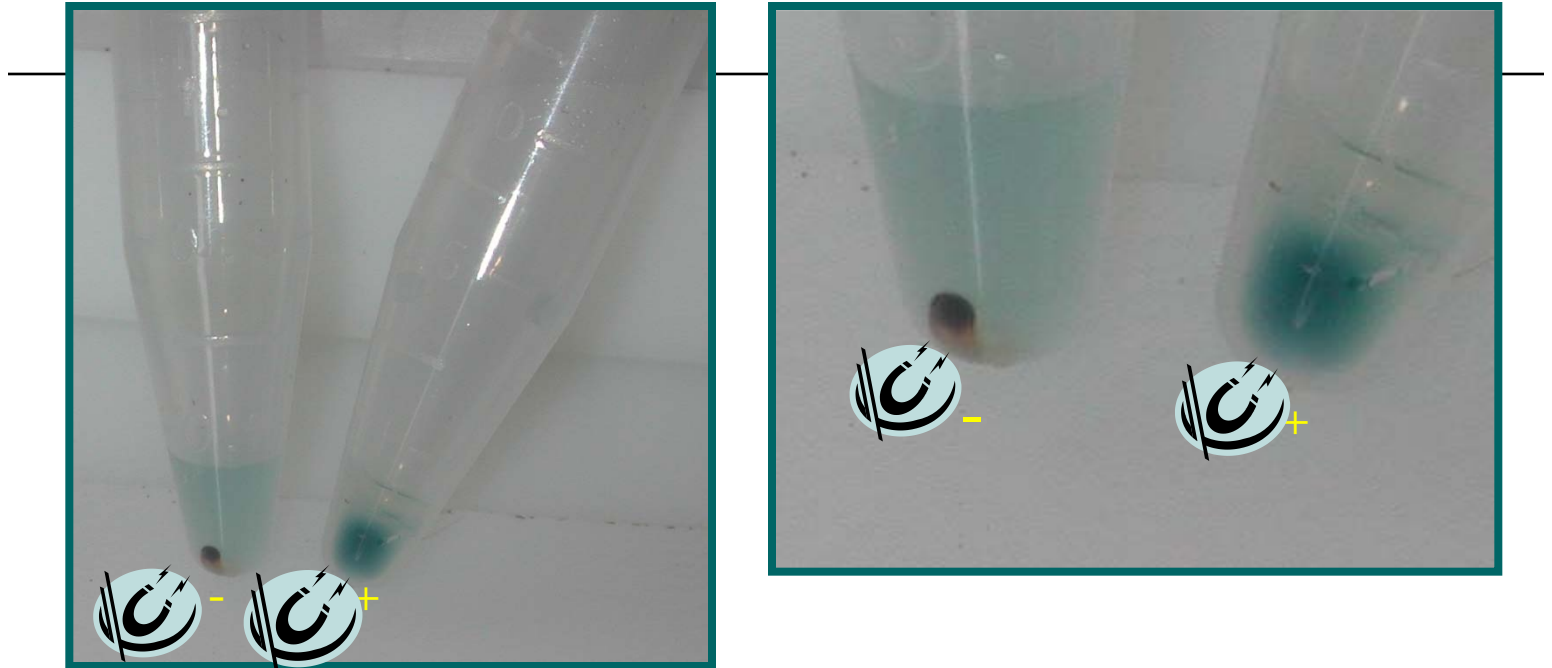


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# Sample Data



Target and magnetic particles were added to tube, then 45 ul of wash was added; the sample was pulled down with a magnet, the unbound was decanted, that procedure was repeated. In both tubes blue plastic beads coated with anti-mouse IgG were added after the last pull down along with 45 ul of wash. The tubes were then placed next to a magnet. The tube on the left is the negative control. The tube on the right is the positive, Peg Mouse IgG. Note: Has been tested in whole blood, results positive.



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# Detection by Capture

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- Current Approach: colored plastic beads
- What else can we use? Anything that can have capture antibodies attached and be placed in solution can be use as a label
- Examples: Fluorescent tags, QDOTS, plastic beads, glass beads, etc.
- Different color beads/tags can be used to multiplex



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# Detection by Capture

## Possibilities

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- Low tech or Hi tech
- Qualitative or Quantitative
- Adaptable to Sandwich assay
- Sensitivity limited only by the volume of sample



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# Advantages of Detection by Capture

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- Fast...no need to wait hours for results
- Portable...can be run outside of the lab
- Can be read visually...no instrument needed
- Simple universal target labeling...large menu
- Works in liquid phase...easily automated

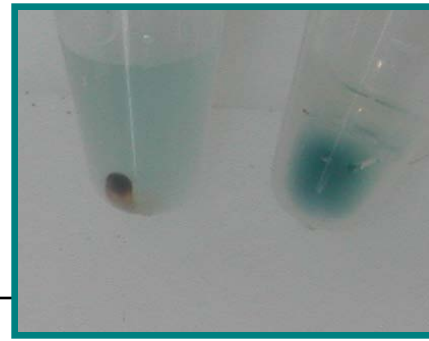


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# This is why.



- Instrument free detection and the low cost of reagents provide an opportunity to manufacture tests with high potential gross margins
- Nominal equipment requirements results in increased product placement.

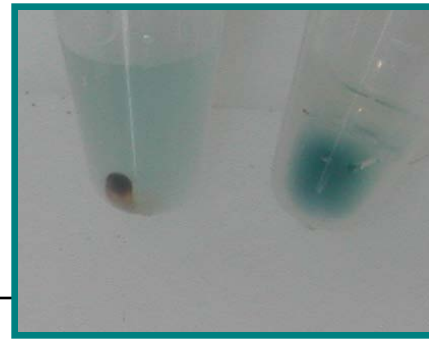


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# What now.



- Patent protected (US Patent # 7,504,262)
- Technology available for license
- Improvement over current technology and IP



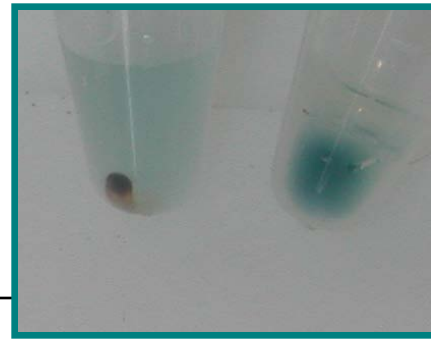
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# What now.

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