



Smartphone-based Food Allergen Detection

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FoodSmartphone Outreach: Science Week



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2012-2015 Forensic Science BSc

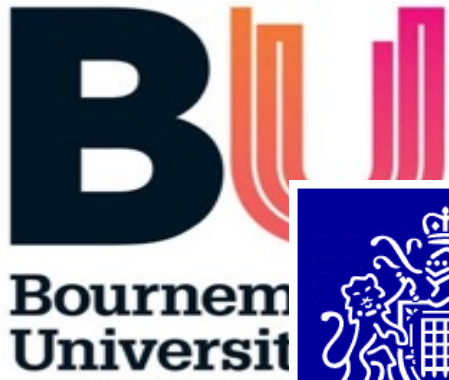




**METROPOLITAN
POLICE**

2012-2015 Forensic Science BSc





Bournemouth
University



**METROPOLITAN
POLICE**

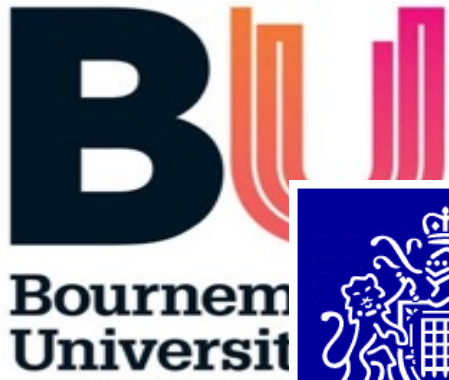


2012-2015 Forensic Science BSc



**2015-2016 Forensic Toxicology
MSc**





2012-2015 Forensic Science BSc



2015-2016 Forensic Toxicology MSc

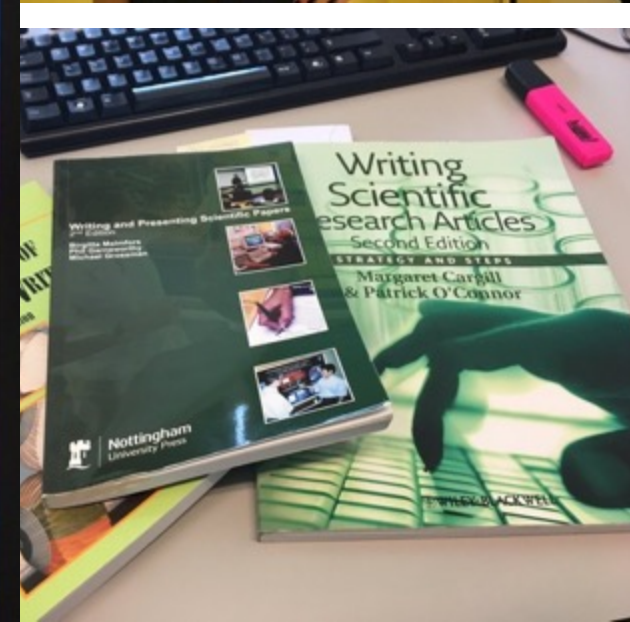
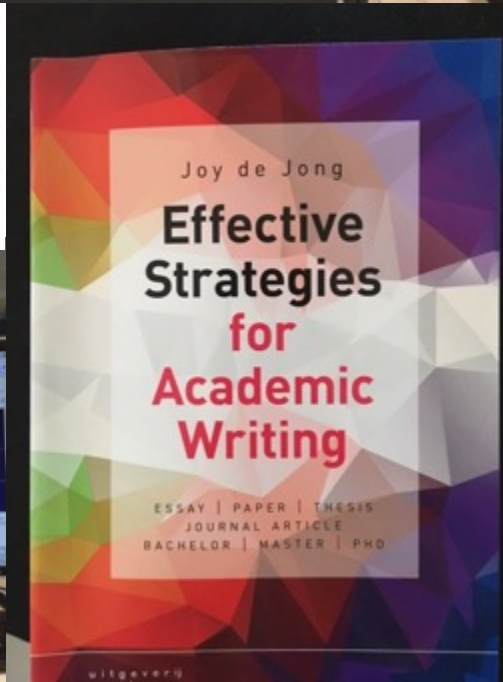
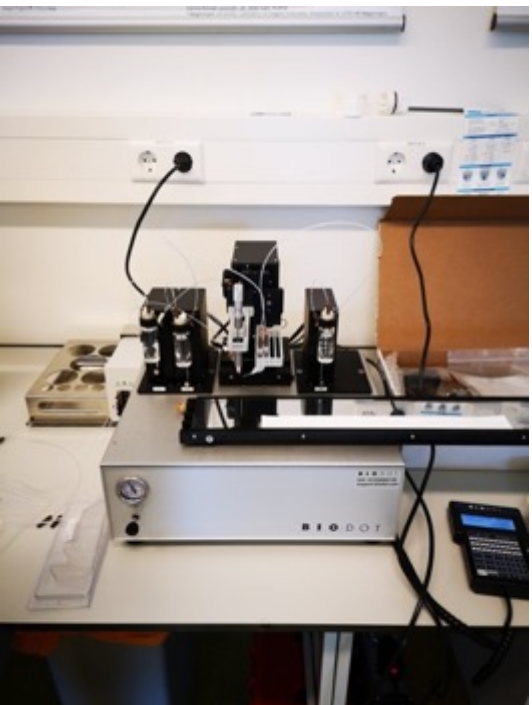


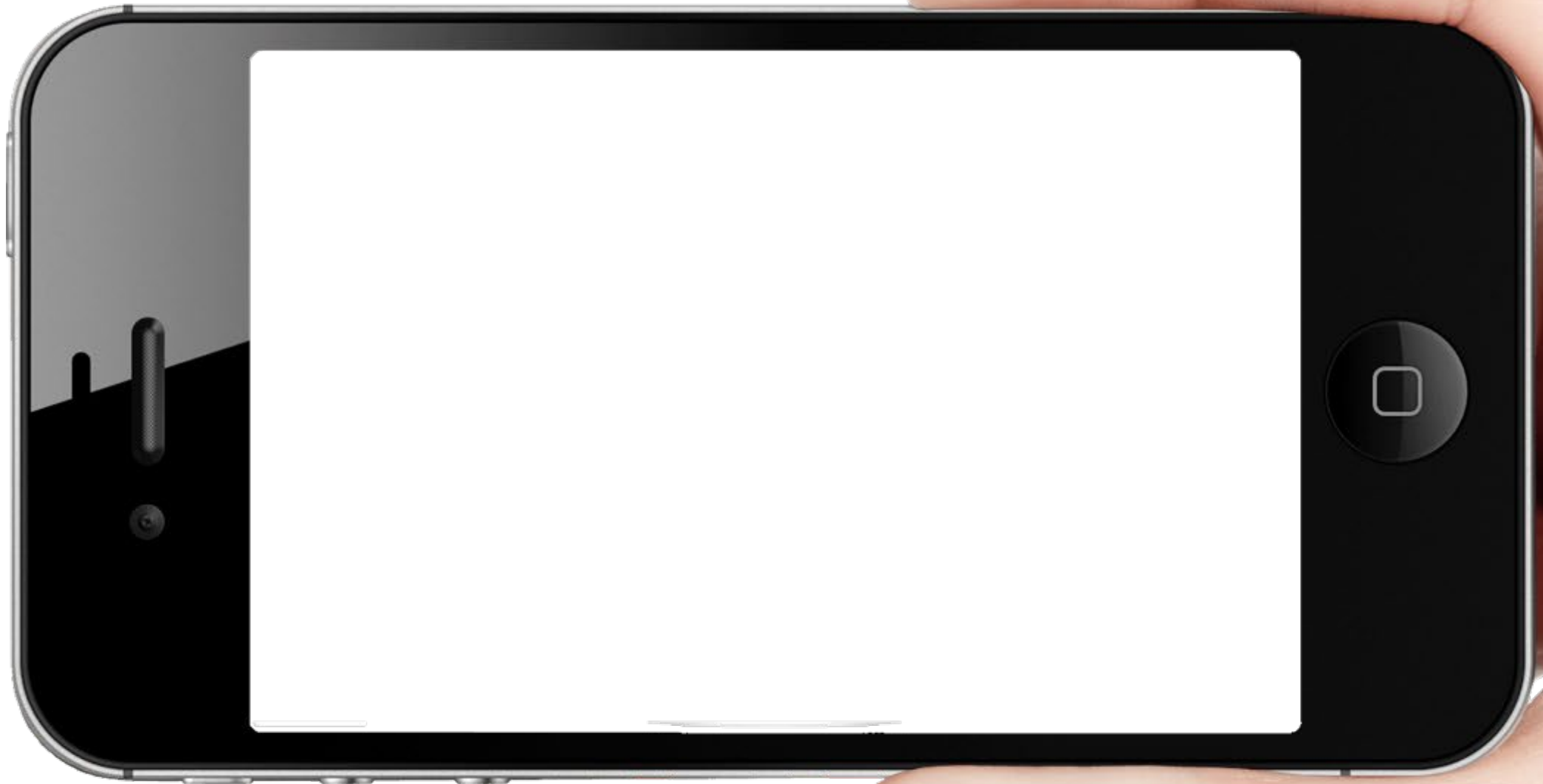
2016-2017 LGC (Toxicology Examiner)



What does a scientist look like?

Life as a PhD



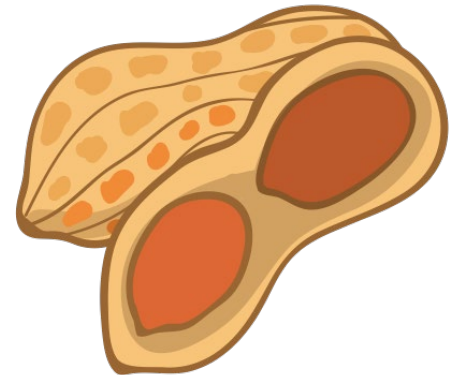


A hand is holding a black smartphone. The screen is white and displays the following text in blue: "Low cost", "Handheld", "Apps", "Internet", "Cameras", and "Easy to use".

Low cost
Handheld
Apps
Internet
Cameras
Easy to use



How can we use smartphone apps for food safety?



What is a Food Allergen?



1
Milk



2
Eggs



3
Fish



4
Shellfish



5
Peanuts



6
Tree Nuts



7
Soy



8
Wheat/
Gluten*



How do we prevent a reaction?

How do we prevent a reaction?



Allergy Advice

Contains: Egg, Mustard

**May contain:
Nuts, Peanuts, Sesame
Seeds, Celery,
Wheat, Barley, Fish,
Soybeans, Milk,
Sulphites and Cereals
containing Gluten.**

Gluten-free



Allergen Information:

Contains Milk

May contain *Wheat*



Allergy advice

- Contains **milk, wheat, gluten, egg.**
- **Recipe:** No nuts.
- **Ingredients:** Cannot guarantee nut free.
- **Factory:** No nuts.

FOOD ALLERGY NOTICE

**PLEASE BE ADVISED THAT
FOOD PREPARED HERE MAY
CONTAIN THESE INGREDIENTS:
MILK, EGGS, WHEAT, SOYBEAN, PEANUTS,
TREE NUTS, FISH AND SHELLFISH**

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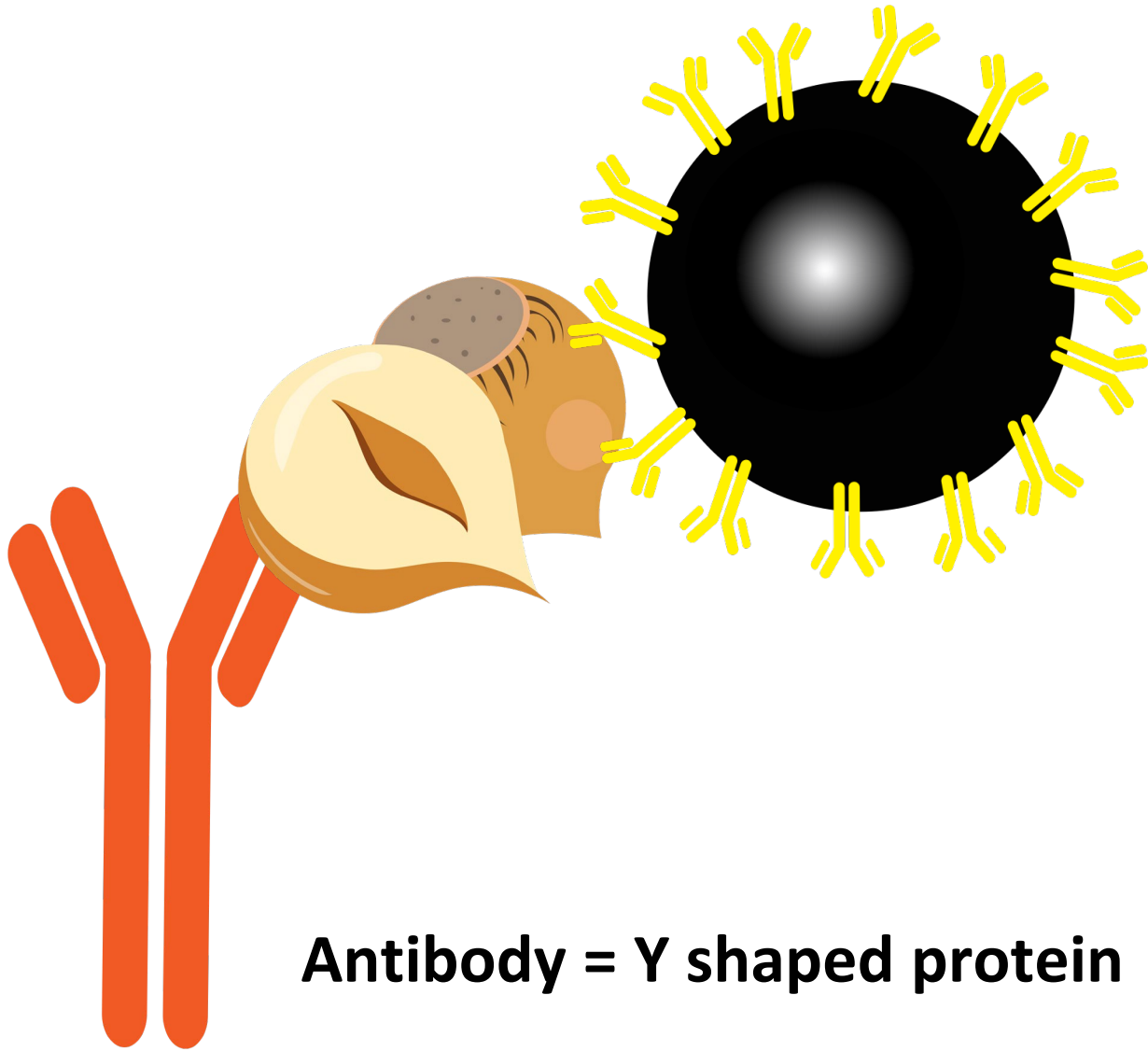
Food Forensics: Finding the Allergen



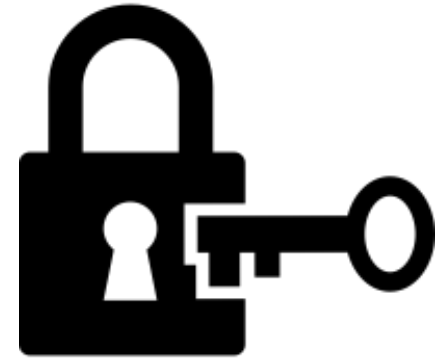
Food = mixture of different proteins

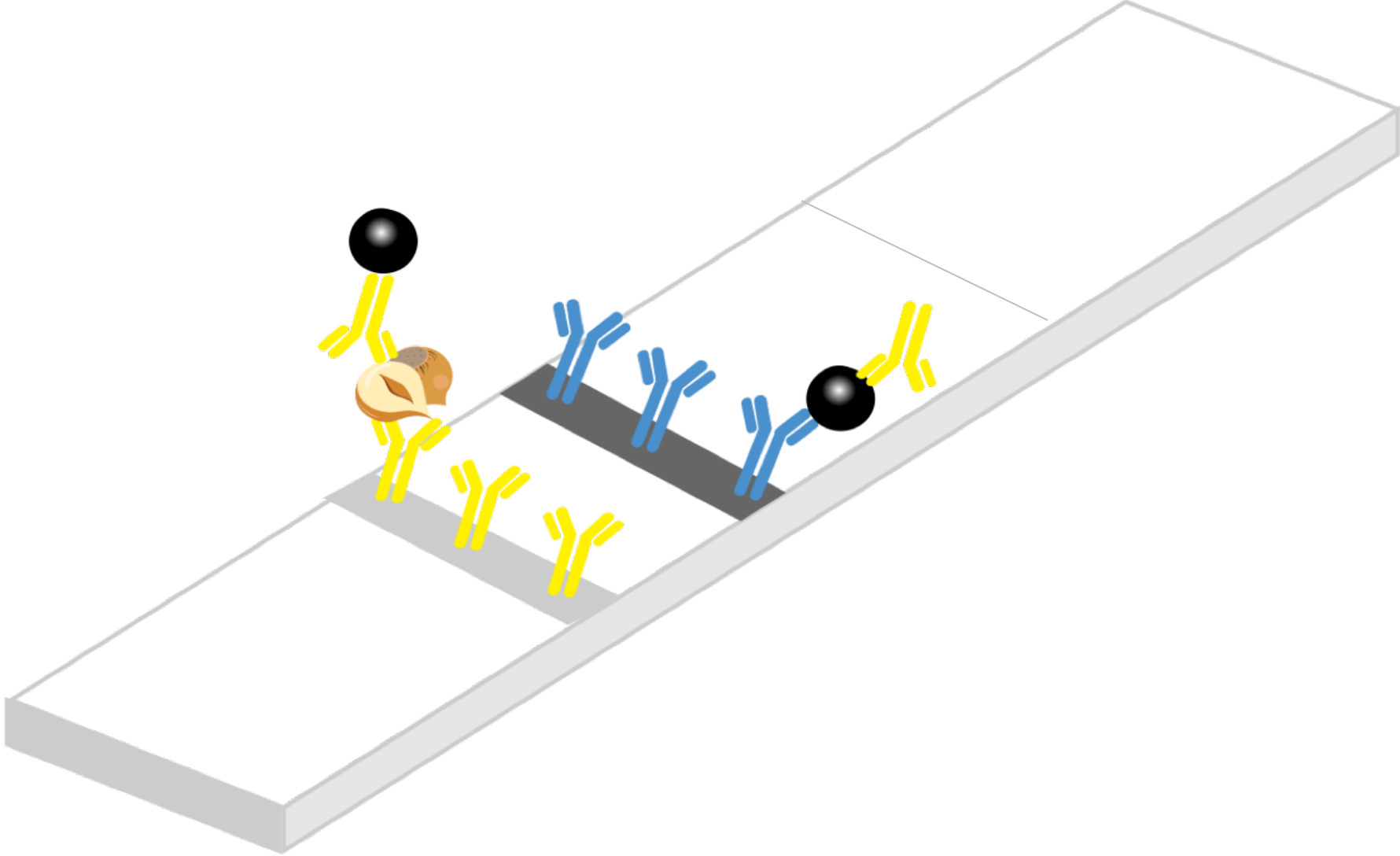
How do we find the protein we are interested in?

By using another protein!

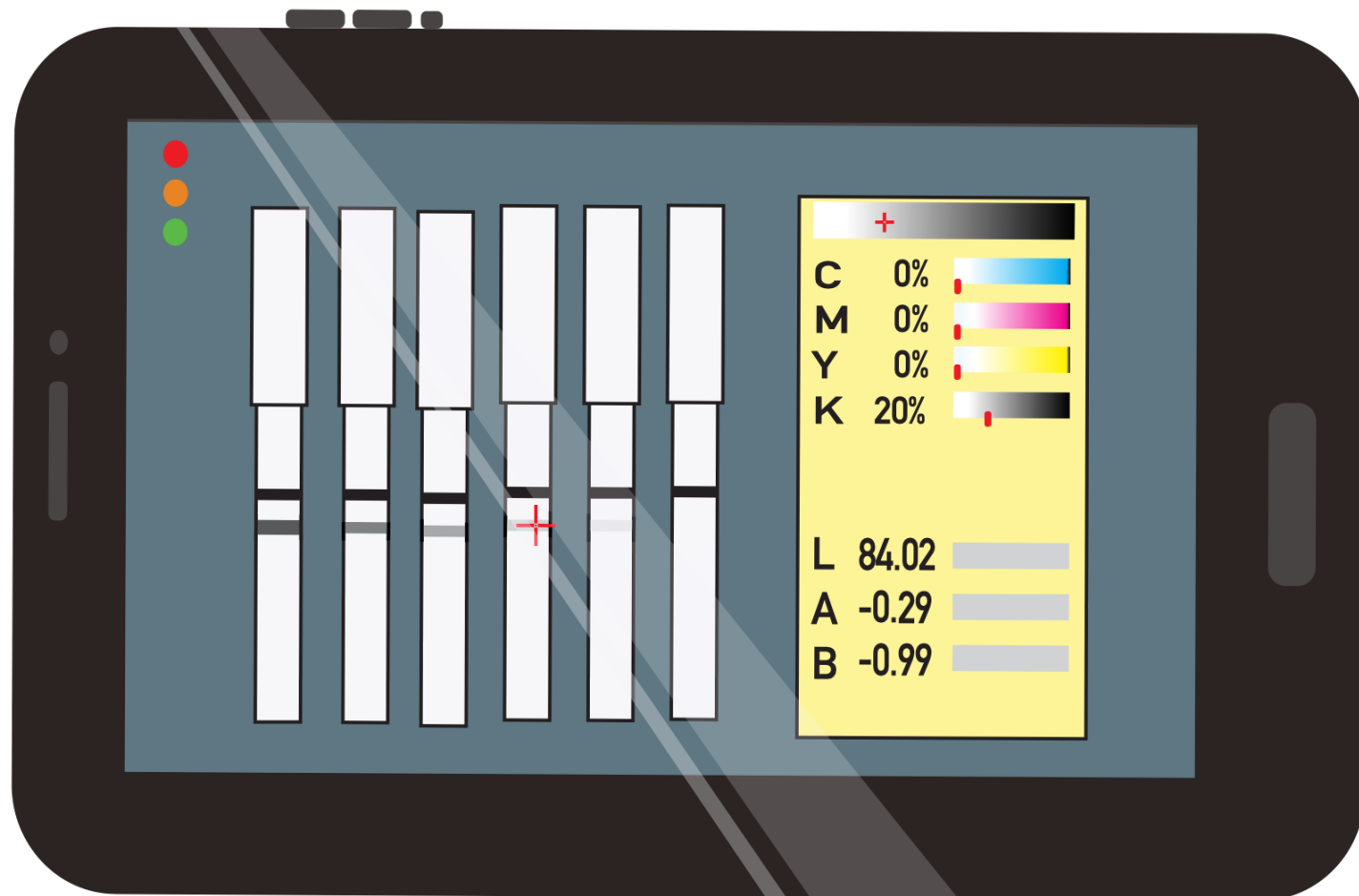


Antibody = Y shaped protein





Smartphone Detection



Now it's your turn...

The Task:



- I want you to become the scientists
- In groups of **5-6** you will be given 3 tests and 3 tubes
- Test the contents of the tube and decide whether you have an allergen present
- Remember, a **darker** first line = **more allergen**