**Motivation**

1. Food allergies afflict more than 13 million Americans.
2. Costs total nearly $25 billion per year.
3. Eight foods account for 90% of all food allergen reactions.
4. A disposable, handheld, accessible, single-allergen detector delivering results in less than 15 min is a missing key product from the current market space.
5. We have created a device of this kind, specifically a peanut-allergen detector as a proof of concept.

**Background**

The Allerjif device works using the same testing mechanism as pregnancy tests, the lateral flow assay.

**Prototype**

The device is comprised of a central chamber filled with buffer, a grinder, and a lateral flow test strip.

**How it Works**

1. Place food sample in device
2. Grind the food until it creates no resistance
3. Put into open position
4. Shake, let sit for 10s
5. Closed position (Turn the bottom half of the device to the "Closed" position.)
6. Insert test strip and absorb liquid until set mark
7. Open the bottom half of the device
8. Remove test strip, sit for 5 minutes and read results

Possible test strip results (There are 4 different possible outcomes, as shown from left to right: Negative, Positive, High Positive, and Invalid. Negative means that no peanuts exist in the food. Invalid (C line is not marked) means that the test must be completed again.)