

## Bacterial Transfer from Biometric Devices

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### Introduction

- Communicable diseases can be passed by surface contact and aerosol contact.
- E. coli and Staph Cells can be transferred from public surfaces. Both types of bacteria occur naturally in the environment.
- Traditional acquisition systems require multiple users to place their fingers on the same surface.
- This experiment is designed to see if a person has more or less chance to pick up either of these bacterium from a biometric scanner versus a doorknob.

### Motivation

- **Touchless Technology** -Increased development of touchless biometric devices.
- **Cleanliness**-Some users are concerned with the hygiene of biometric devices.

### Methodology

- Artificially contaminate 3 commonly used biometric devices with laboratory strands of Staph and E. Coli.
- Artificially contaminate a common door knob.
- Measure rate of transfer.
  - Touch device with gloved finger and then touch plate.
  - Allow plate to grow for 24-48 hrs. @ 37 C.
  - Count number of colonies.

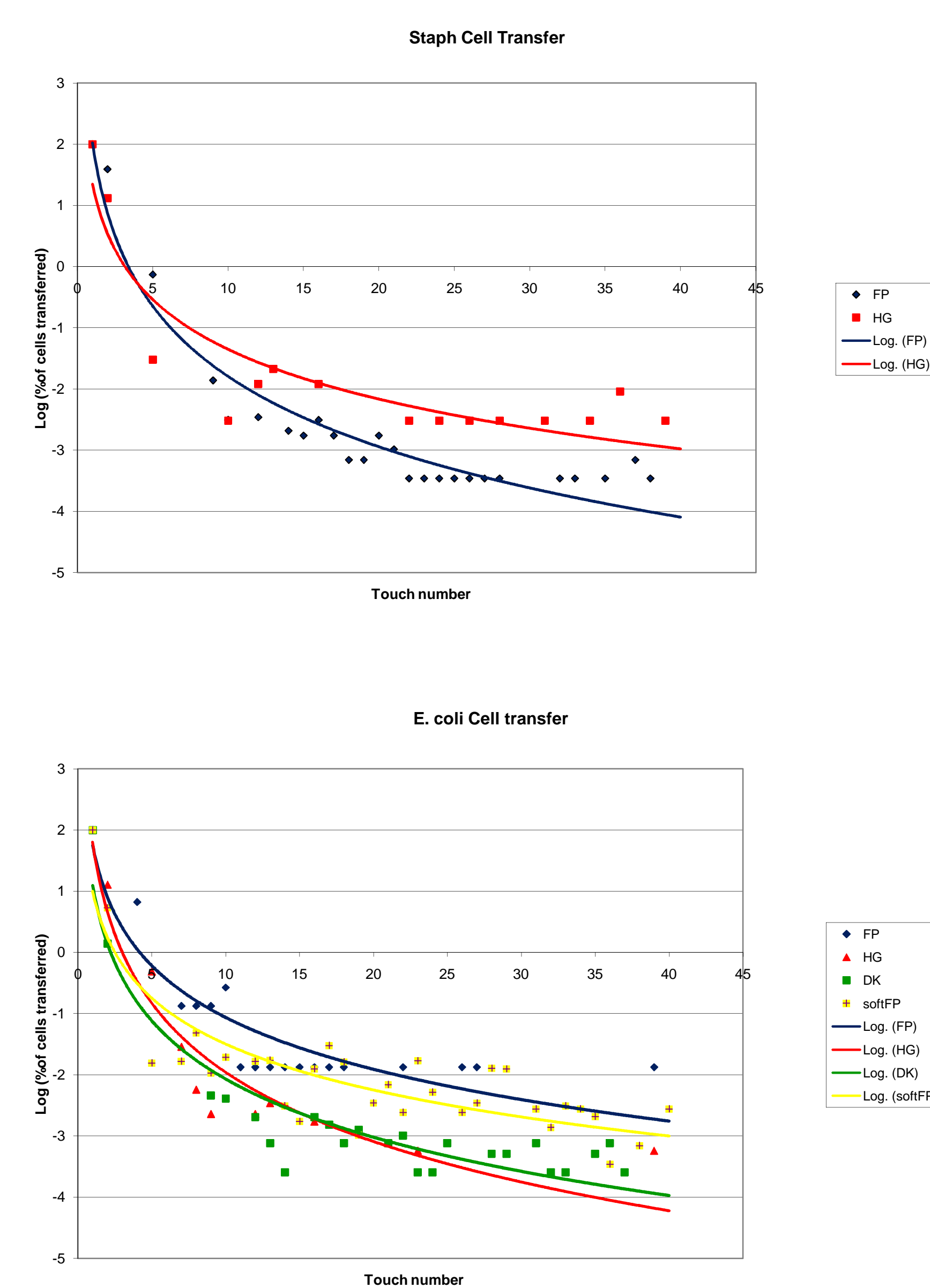
Hand Geometry Reader



Fingerprint Reader



### Results



- Both bacteria showed similar transfer rates.
- One can see that the door knob follows the same transfer pattern and closely matches the transfer of hand geometry reader (a hard surface).
- Note: Less E. Coli cells were initially transferred on to the fingerprint reader and therefore an artificial high was observed.

### Conclusions

- Devices are no dirtier than a door knob.
- Surface type can affect transfer rate.
- Transfer decreases after the first 5-10 touches.
- Transfer is not an indication of infection.