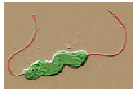

Campylobacter-host
interaction at the
intestinal mucosal
surface

Important facts about *Campylobacter*



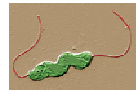
Campylobacter, particularly *Campylobacter jejuni*, is one of the most common bacterial causes of diarrheal illness in the United States.



0.5% of the general population are infected each year in the United States



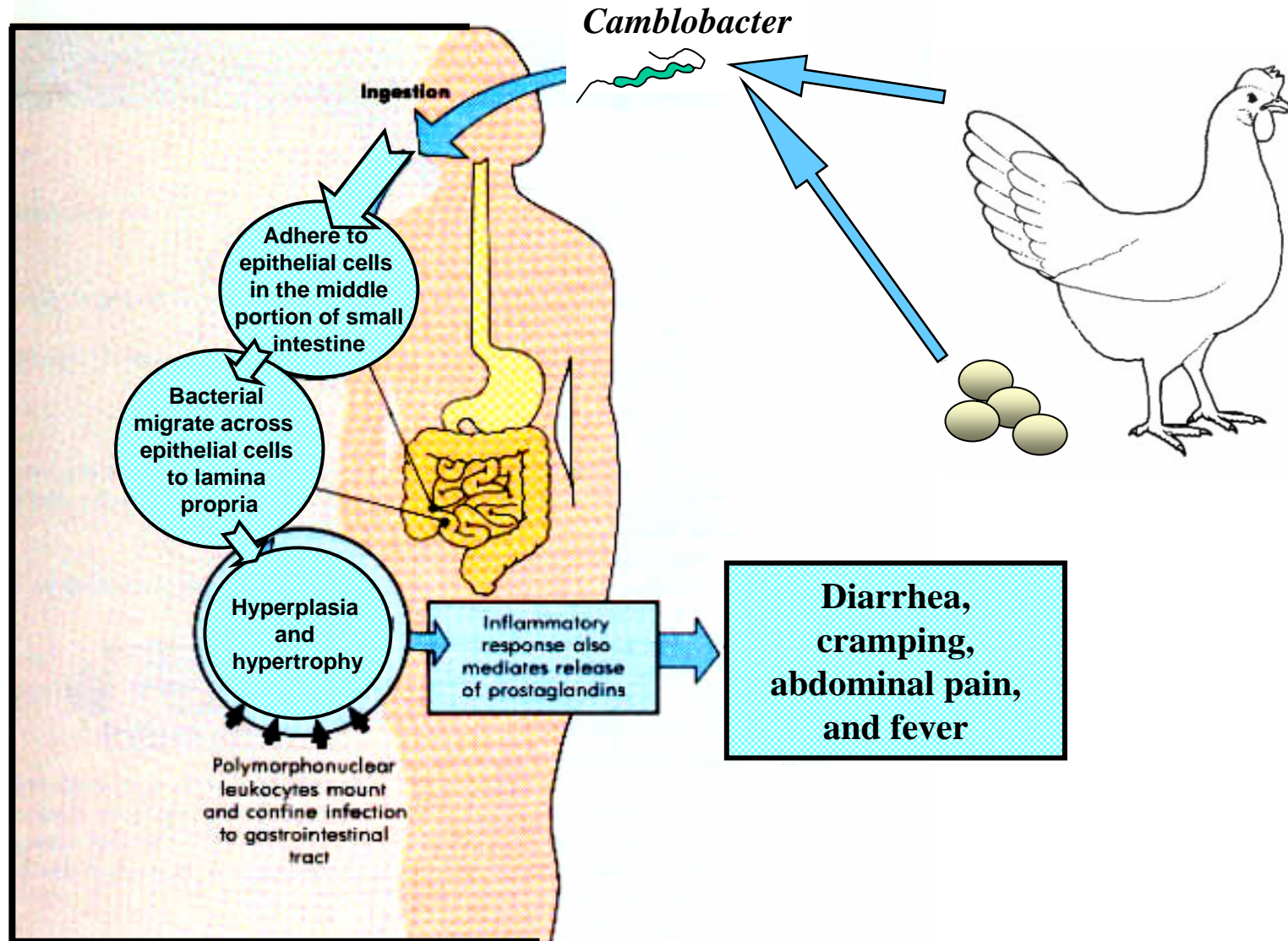
Campylobacteriosis can trigger Guillain-Barré syndrome, an autoimmune disease affecting the nerve system.



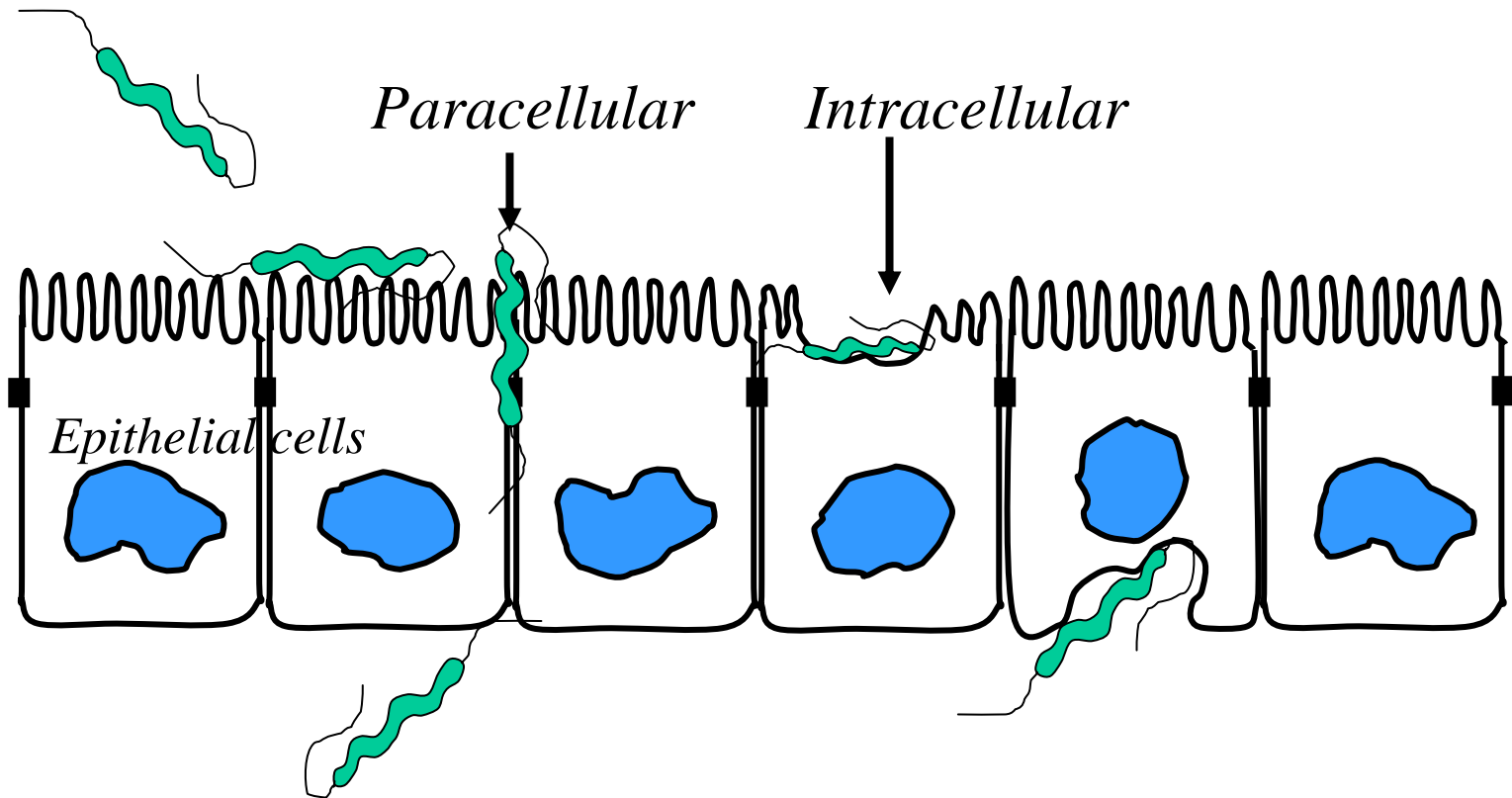
Fewer than 500 of *Campylobacter* organisms can cause illness in humans.

from CDC web site

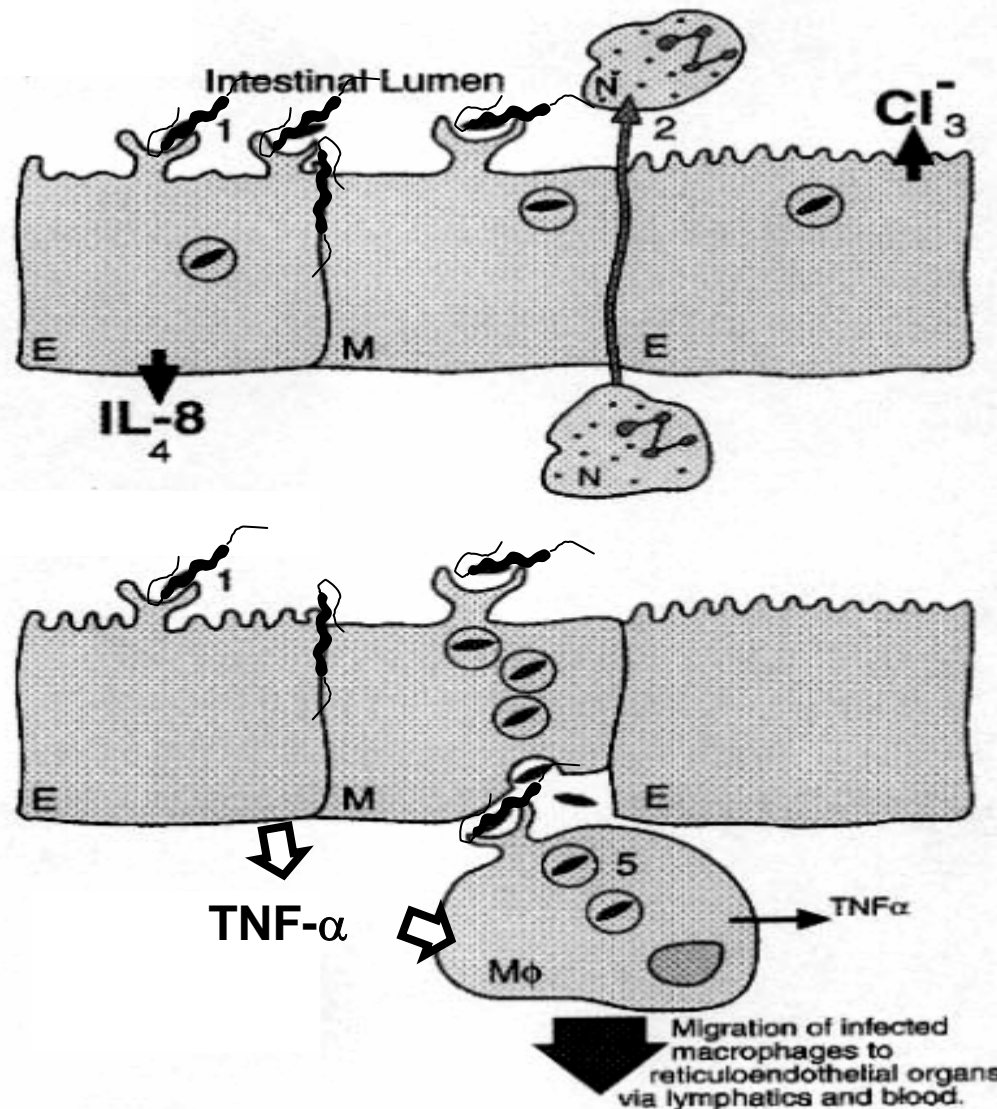
Poultry Productions is the major source of *Camblobacter*



Transmigration of *Campylobacter* across the intestinal epithelial layer



Inflammatory responses against *Cambylobacter*



Objectives of the project



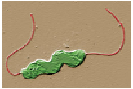
Select invasive and non-invasive strains from food isolates

To compare the abilities of different isolates of *C. jejuni* to adhere, invade, and migrates across the polarized epithelial layer.



Exam the invasion mechanism

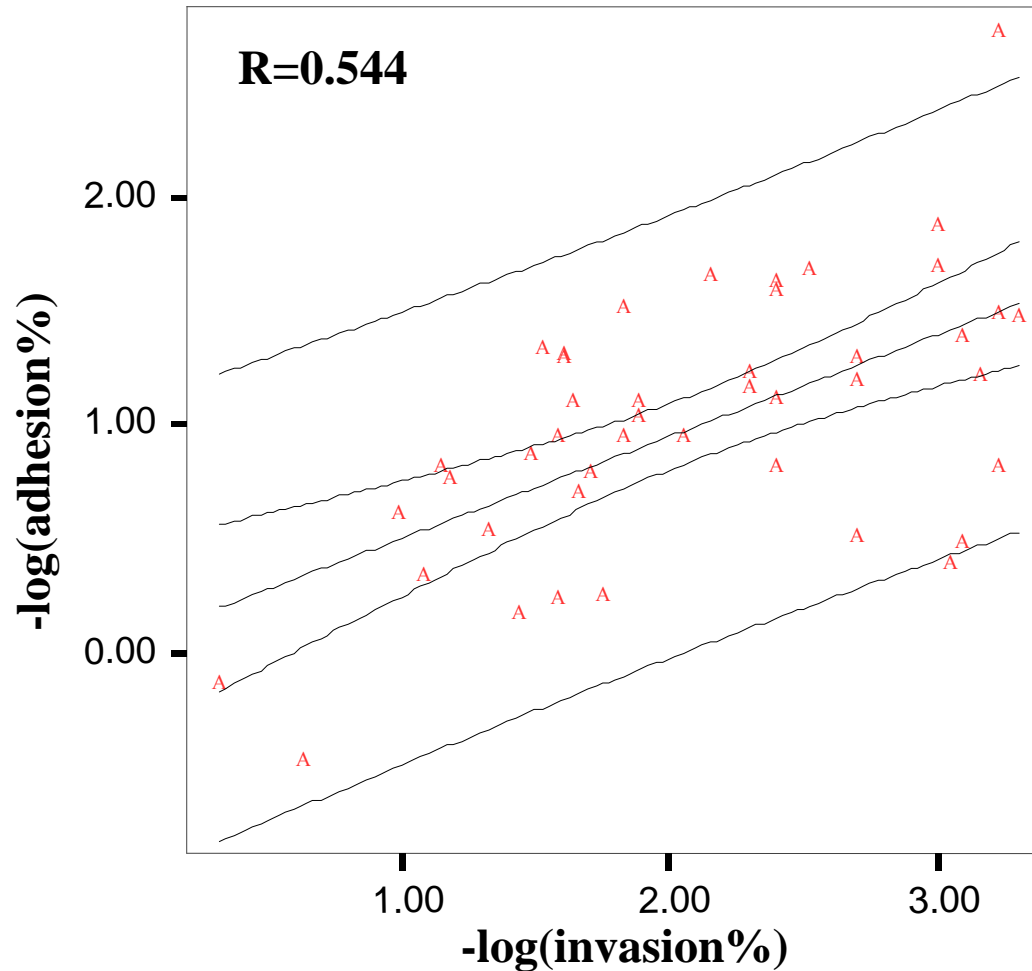
To determine the effect of *C. jejuni* invasion on the organization of the tight junction and actin cytoskeleton of polarized epithelial cells.



Exam the initial immune responses

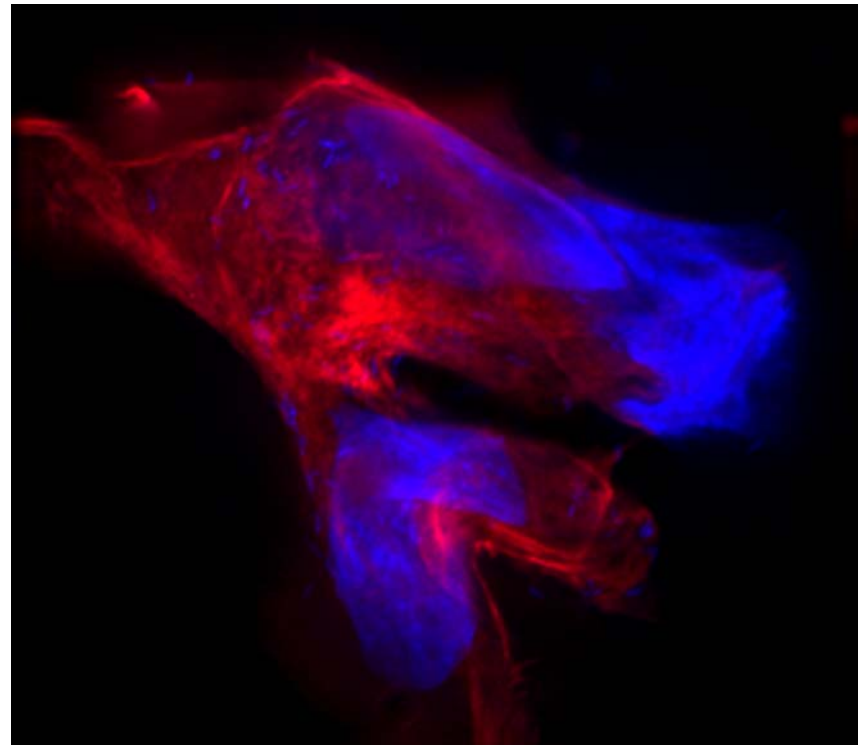
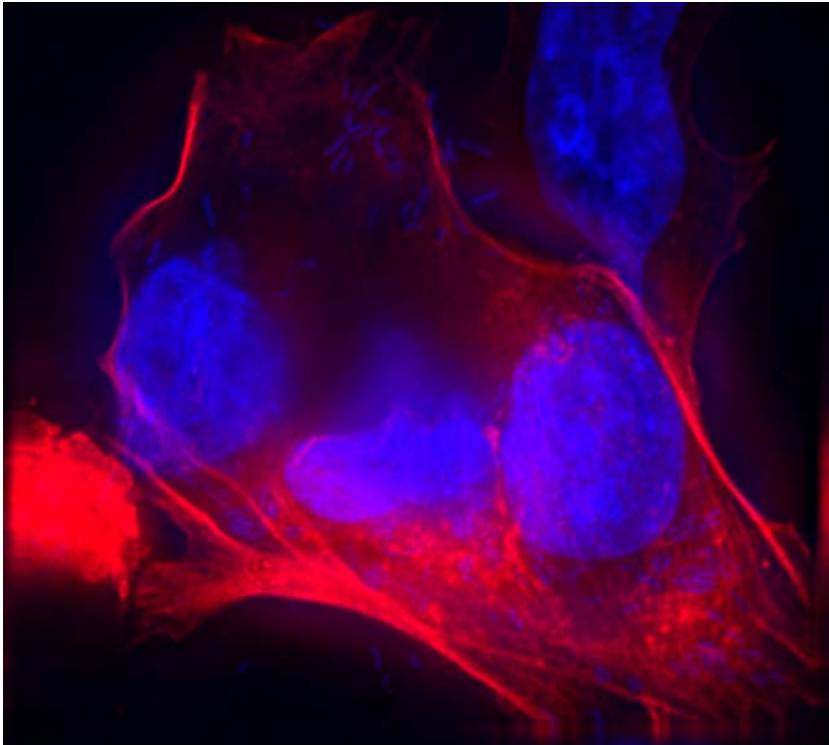
To determine the effect of *C. jejuni* invasion on the surface expression of the chemokine and homing receptors for leukocytes.

Correlation between the adherent and invasive abilities of *Campylobacter* strains isolated from retail meat



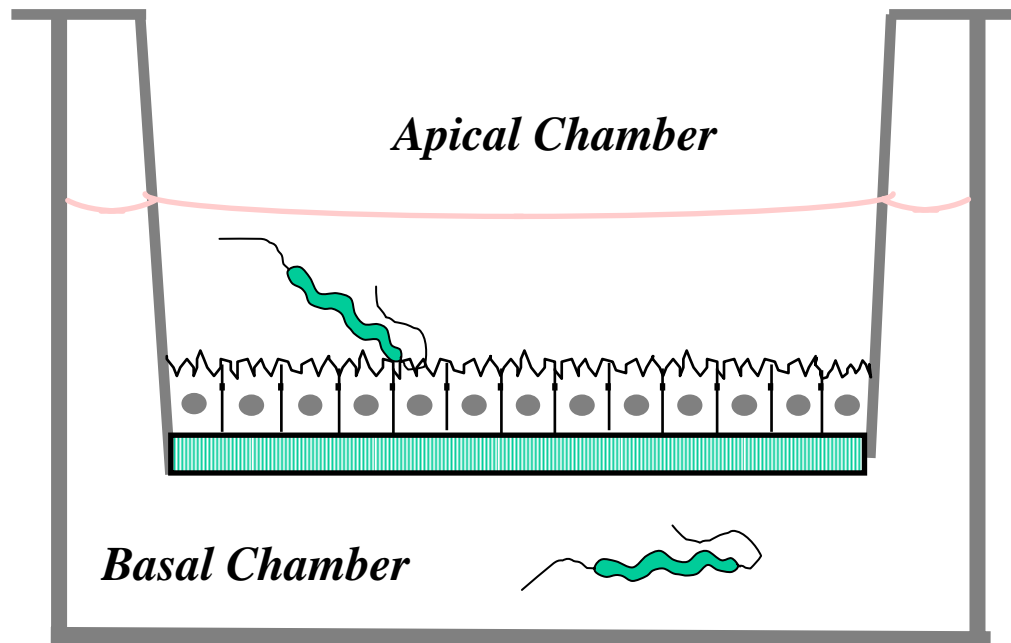
$$[-\log(\text{adhesion}\%)] = 0.06 + 0.45 * [-\log(\text{invasion}\%)]$$

Campylobacter invasion into human intestinal epithelial cells

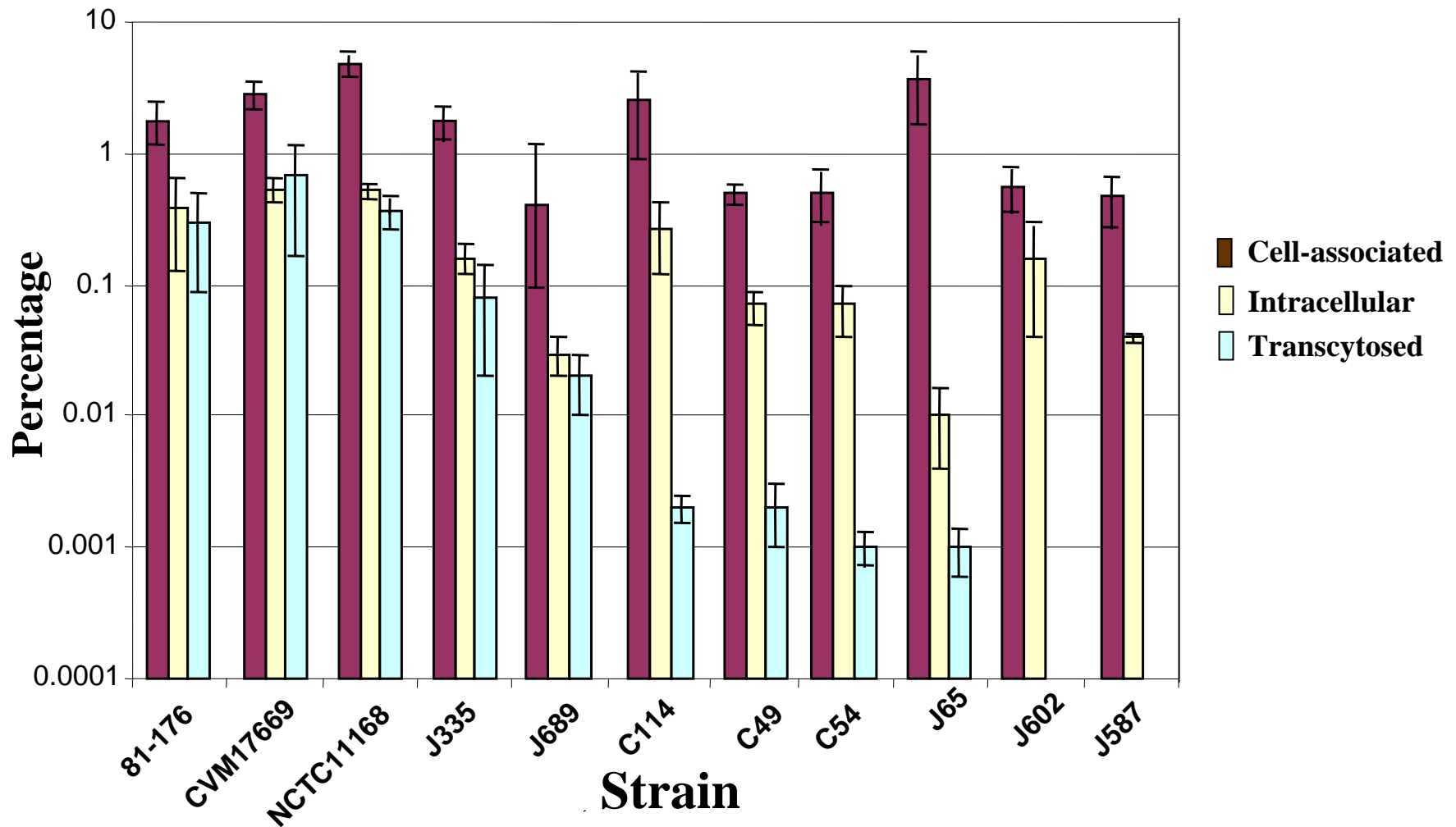


Nuclei/*Campylobacter*/actin filaments

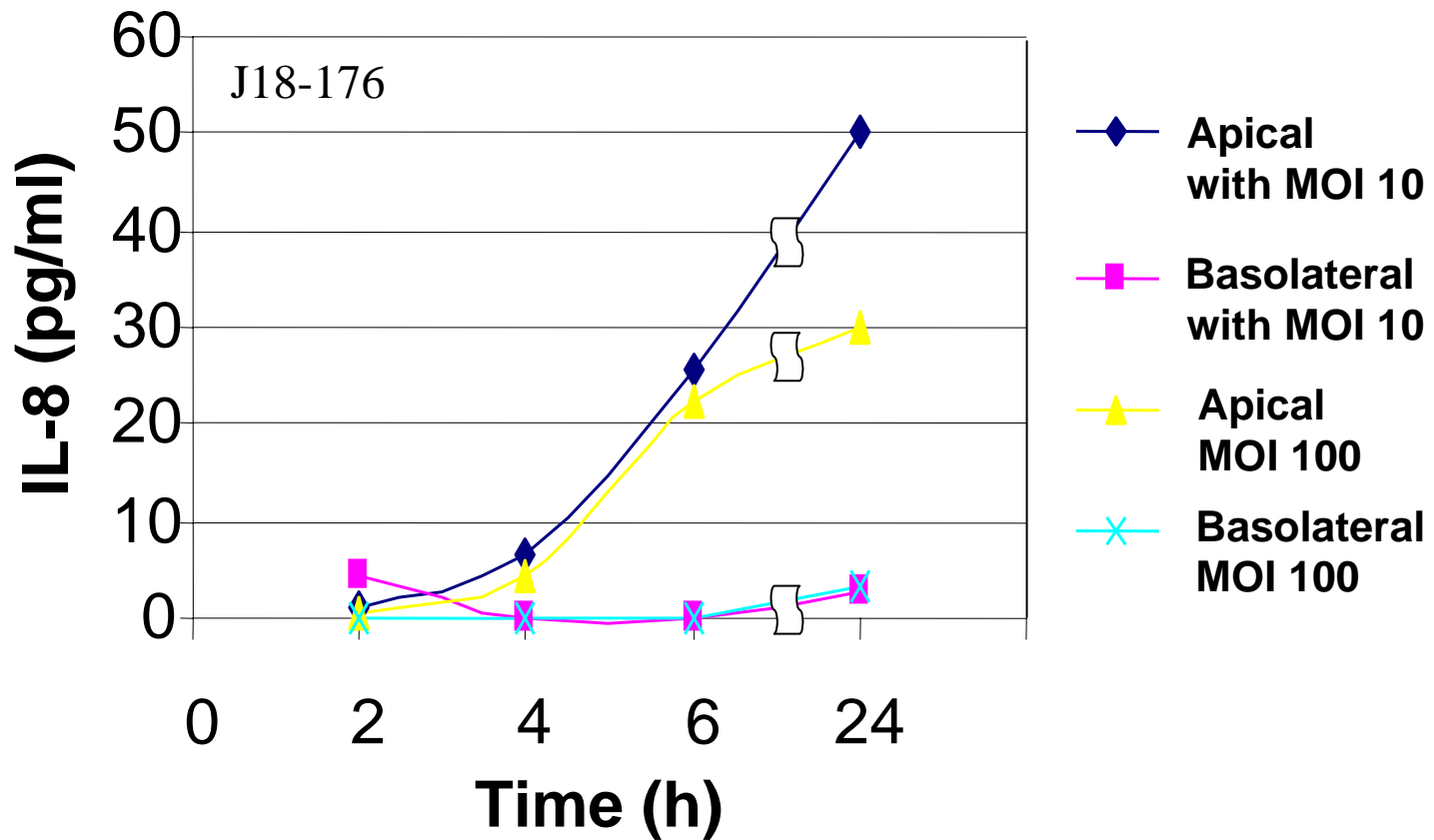
Polarized Epithelial Cell Culture System



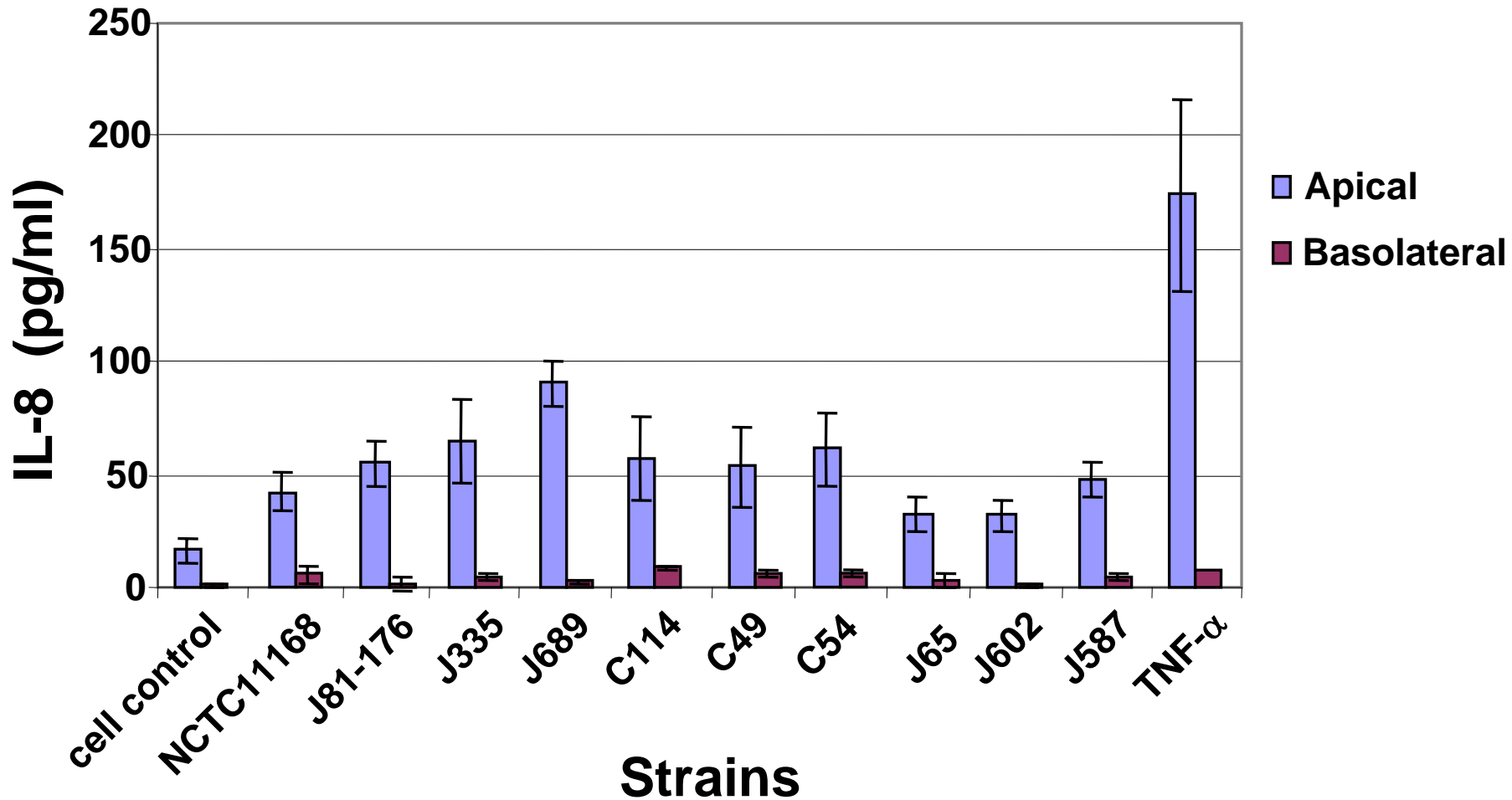
Transcytosis of *Cambylobacter* across polarized intestinal epithelial cells



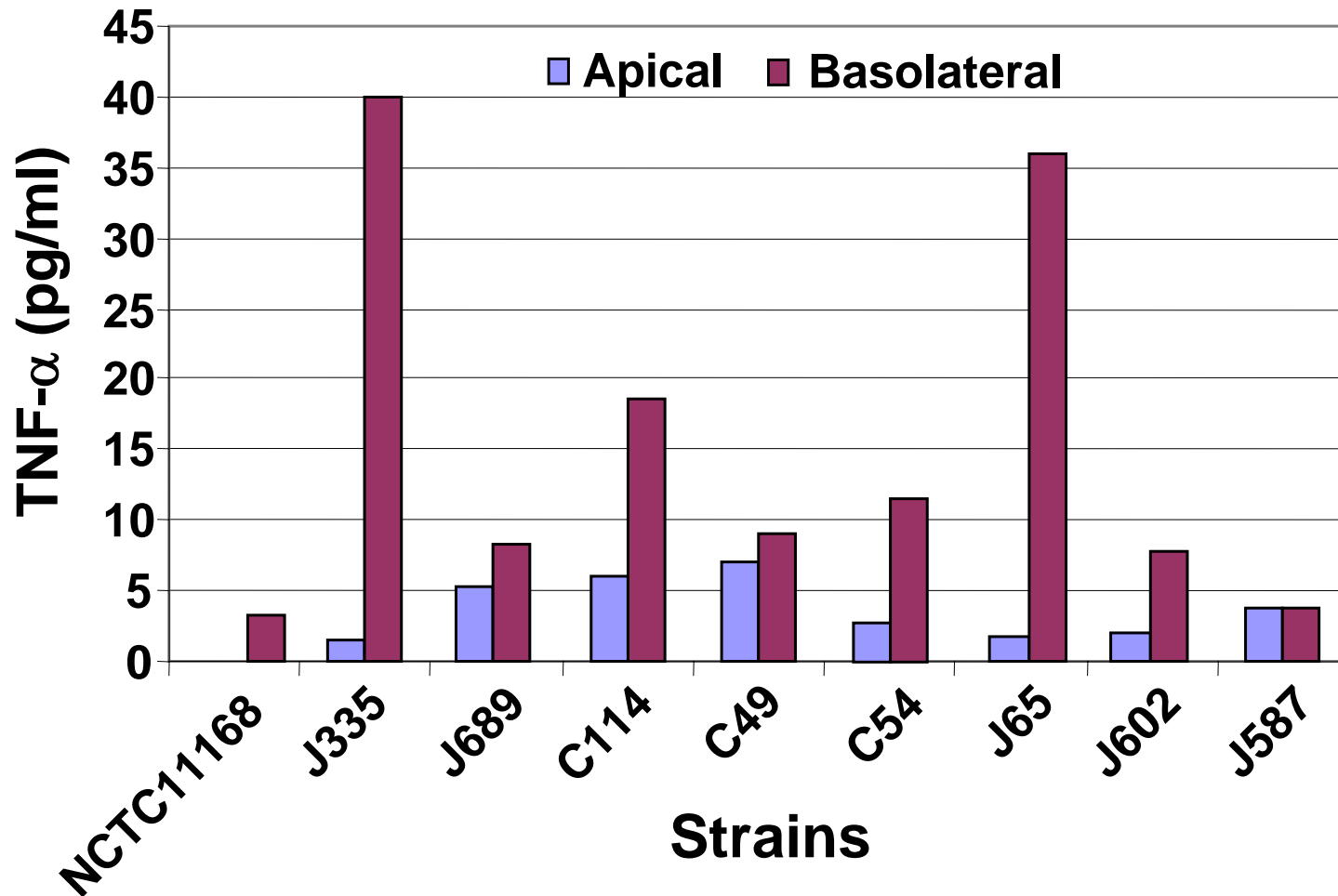
Gonococci-induced Interleukin-8 secretion by polarized human intestinal epithelial cells



IL-8 secretion induced by *Campylobacter* retail meat isolates



TNF- α secretion induced by *Campylobacter* retail meat isolates



Summary

The retail meat isolates of *Campylobacter* have a wide range of adherence, invasion, and transcytosis abilities.

The abilities of *Campylobacter* retail meat isolates to invade human intestinal epithelial cells are positively associated with their adhere abilities.

Campylobacter induces polarized secretion of inflammatory cytokines IL-8 and TNF- α in human intestinal cells.

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