INFLAMMATORY BOWEL DISEASE (IBD) Luminal bacteria (e.g. Escherichia coli, Mycobacterium avium paratuberculosis) Peptidoglycans Lipopolysaccharides Flagellin OMDP PGN Antigen O K03156 ODNA \bigcirc Toll-like receptor signaing pathway \bigcirc Inflammation Cytokine-cytokine receptor interaction NOD-like receptor signaing pathway Th1 lymp hocyte Bacterial invasion K05132... DNA JAK-STAT signaling pathway) K05064 K05406... K05429 Inhibiton of activated Th2 cell K05063 0 DNA K03156 K05482 K05173... K05405 K04383... DNA Macrophage Increase the frequency of Th17 cells —————► Tissue injury ——► Crohn's disease K10159 Th 17 lymp hocyte K13375... O_{DNA} K05405 K04692 THO cell /DNA 🔾 K05075 K10784... K10163 K06752 DNA APC K08534 Antigen processing and presentation K05065 K05426 T cell receptor signaling pathway K05063 K08532 DNA DNA JAK-STAT signaling pathway Th2 lymp hocyte 0 JAK-STAT signaling pathway K04446 DNA K05430 K05071 ►O -DNA K05430 K11225 → GATA-3 **→** 0 Ulcerative colitis K05428 DNA K05435 → Inhibiton of activated Th1 cell K04687 **→** ○ K05443 DNA K05435 NKT cell K05443 K13375... K10163 —— 🖚 Inhibiton of IBD K13375... Tregcell 05321 7/16/13 (c) Kanehisa Laboratories