ECCO 2025 Clinical and AI / ML Preview

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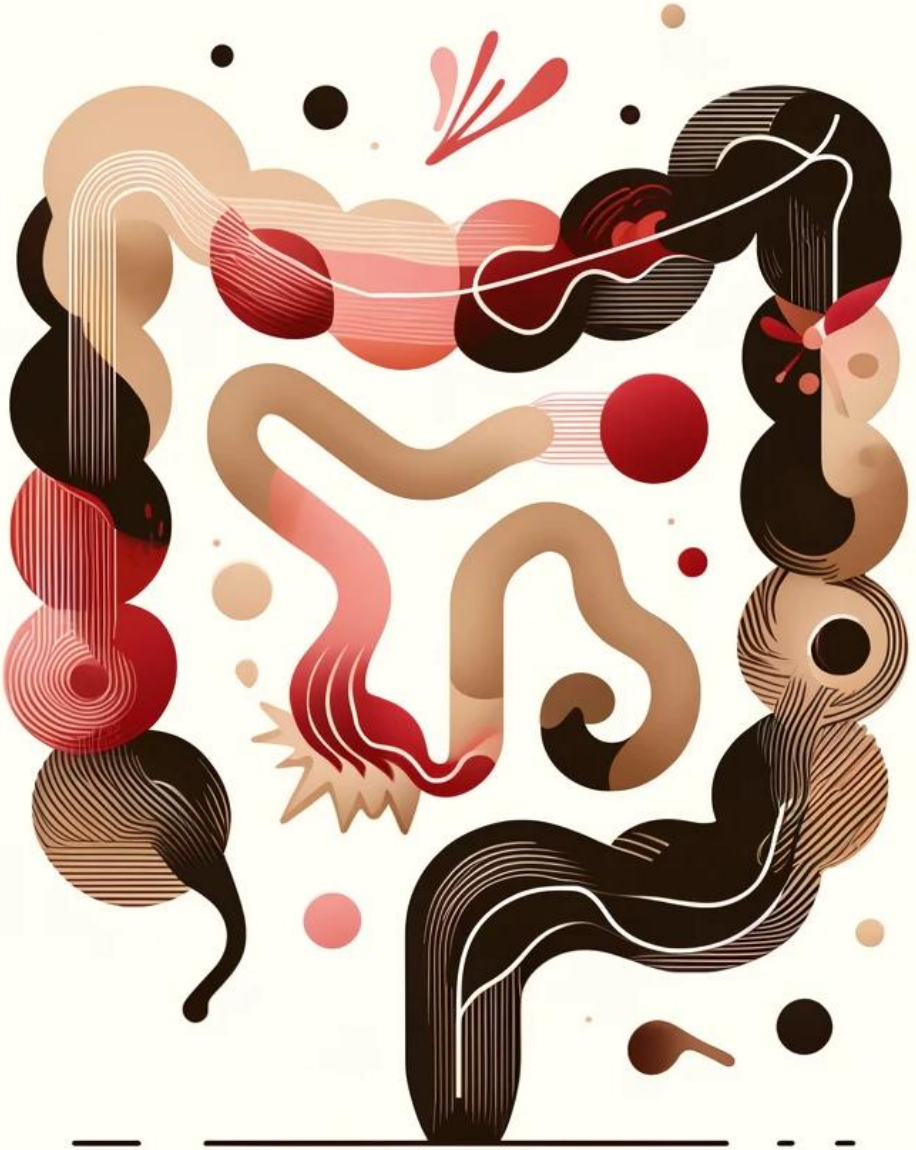

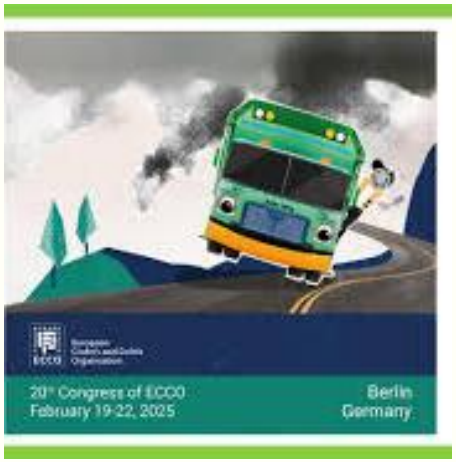

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ECCO 2025 – General Overview

- **Scientific Focus:** ECCO 2025 will showcase groundbreaking research in IBD, unveiling novel therapeutic approaches, emerging drug classes, and real-world data shaping future treatment paradigms
- **Multidisciplinary Approach:** The congress will highlight cross-specialty collaboration among gastroenterologists, surgeons, nutritionists, and allied healthcare professionals to optimize comprehensive IBD care
- **Innovation & Technology**: AI-driven diagnostics, advanced biomarkers, and digital health solutions will take center stage, transforming precision medicine and real-time disease monitoring in IBD management
- **Sustainability & Personalized Medicine:** The event will emphasize sustainable treatment strategies, long-term remission solutions, and patient-tailored therapies, redefining individualized disease management
- **Guidelines & Consensus:** ECCO 2025 will introduce updated consensus statements and clinical guidelines, shaping global standards in IBD diagnosis, treatment algorithms, and therapeutic decision-making

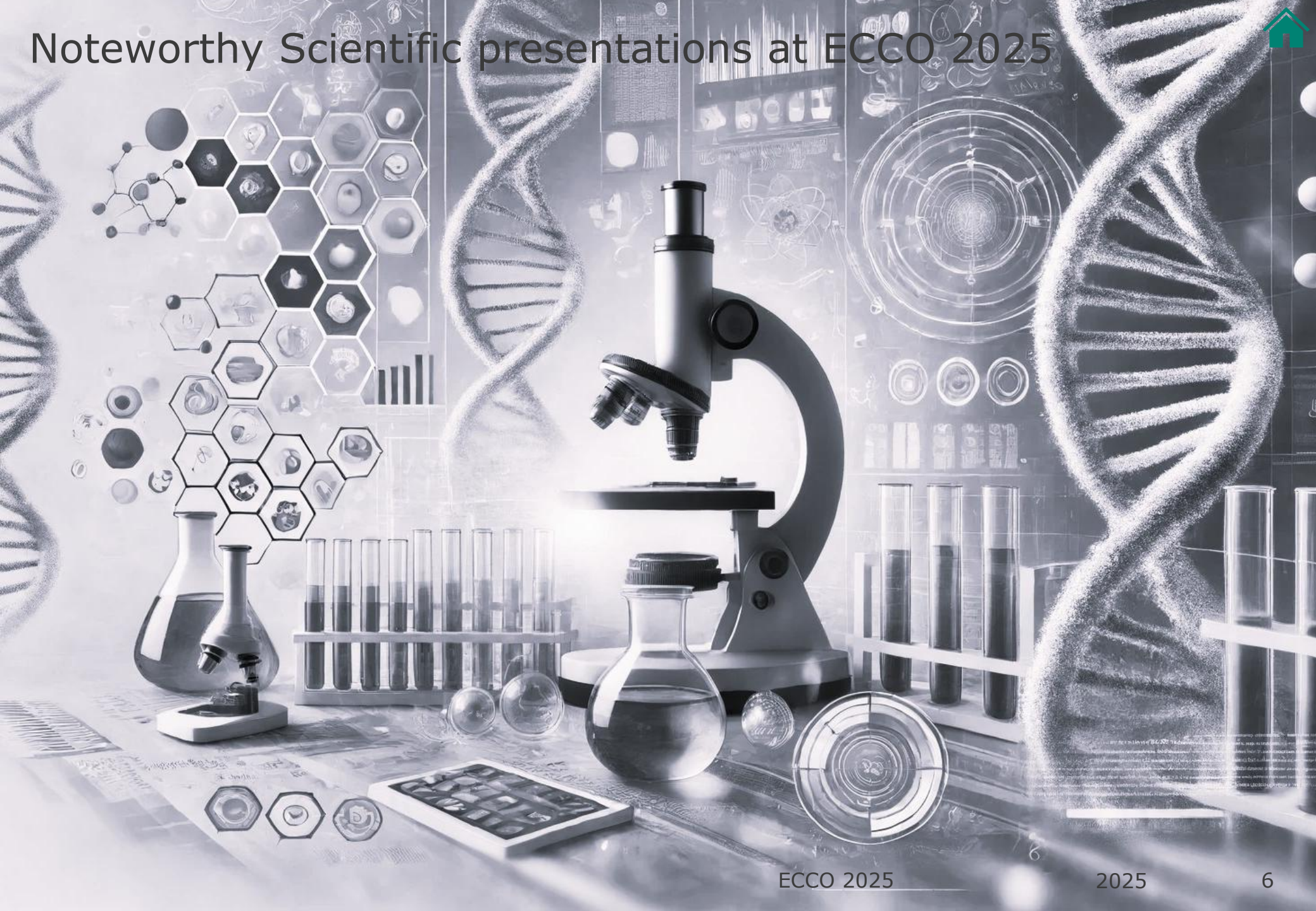
ECCO 2025– Conference Themes (1/2)

- **Next-Generation Drug Development:** Exploration of novel therapeutic targets, including anti-inflammatory pathways, gut microbiome modulation, and cell-based therapies for treatment-resistant IBD cases
- **Host-Microbiome Interactions in IBD:** Cutting-edge research on how gut microbiota influence disease progression, with potential microbiome-targeted therapies reshaping IBD treatment strategies
- **IBD in Special Populations:** A dedicated focus on unique challenges in pediatric, elderly, and pregnant IBD patients, addressing treatment modifications and long-term management
- **The Role of Nutrition in IBD Management:** Latest evidence on dietary interventions, personalized nutrition plans, and the role of exclusive enteral nutrition (EEN) in disease remission

ECCO 2025– Conference Themes (2/2)

- **Minimally Invasive & Organ-Sparing Approaches:** Advancements in endoscopic and laparoscopic techniques aimed at reducing the need for aggressive surgical interventions in IBD patients
- **IBD-Related Extraintestinal Manifestations:** Investigating complications beyond the gut, including musculoskeletal, dermatological, and hepatic manifestations, and integrated management strategies
- **Future of IBD Research & Clinical Trials:** Discussion on emerging clinical trials, novel endpoints, and real-world evidence shaping the next generation of IBD treatments
- **Healthcare Policy & Access to IBD Care:** Addressing global disparities in IBD treatment, cost-effective therapy models, and the integration of telemedicine for broader accessibility

Noteworthy Scientific presentations at ECCO 2025



Key Topics From Notable Presentations (1/5)

- **Major Trials & Treatment Efficacy:** ECCO 2025 will highlight results from several Phase 2 and 3 trials showcasing new therapeutic advancements
  - The T&H diet is expected to offer a more tolerable alternative to EEN (88% vs. 52%) for CD while maintaining similar remission rates. Ustekinumab data indicate a reduction in secondary IMID risk (HR=0.63, p<0.001) compared to anti-TNFs, reinforcing its safety profile. Data on infliximab in PFCD demonstrate suboptimal trough levels (9% vs. 46%), emphasizing the need for dose optimization.
  - Long-Term Efficacy & Safety of Emerging Therapies: Sessions are set to present data on Risankizumab, Etrasimod, and Upadacitinib, demonstrating sustained clinical and endoscopic remission over four years, supporting their long-term use. Vedolizumab + Upadacitinib data suggest enhanced early clinical (63.4%) and endoscopic (61.5%) response compared to monotherapy.
  - Next-Gen Targeted Therapies: Data highlight Guselkumab achieving superior UC remission rates (27.6% vs. 6.5%, p<0.001), positioning it as a strong first-line option for moderate-to-severe cases.

Key Topics From Notable Presentations (2/5)

- **Predictive Biomarkers & Personalized Medicine:** Advances in genetic, metabolic, and molecular biomarkers for personalized IBD treatment will be showcased
  - Genetic & Molecular Risk Stratification: Data presented are expected to show that HLA-DQA1 alleles predict anti-TNF failure, while fecal TNF (>7.07 pg/mL) signals colectomy risk (AUC=0.72, specificity=89.8%).
  - Metabolic & Biochemical Profiling: Findings suggest tryptophan metabolism outperforms CRP in predicting JAK/IL-23 response. FTIR spectroscopy (AUC >0.9) is expected to emerge as a biomarker for anti-TNF response in fibrostenotic CD.
  - Multi-Omics & Disease Classification: CD remission studies to show 91% of altered metabolites persist, driving non-immune targeted therapies. High Quin levels are expected to predict severe disease and biologic escalation.
  - Personalized IBD Care: Data suggest single-cell RNA sequencing differentiates responders, while stool infections (40%) correlate with CRP elevation (p=0.033), refining infection risk assessment.

Key Topics From Notable Presentations (3/5)

- **Microbiome-Disease Link & Therapeutic Applications:** Research expected to highlight the impact of gut microbiome composition on disease progression, with specific bacterial strains linked to early relapse prediction
  - Microbial Metabolism & Disease Progression: IBD patients exhibit altered tryptophan metabolism, with reduced auxotrophies and increased degradation pathways, driving inflammation and potential therapeutic targeting. The oral-gut microbiome axis is expected to emerge as a key factor, with Porphyromonas gingivalis worsening UC through mucosal barrier disruption, and oral bacterial enrichment (Fusobacterium, Neisseria) linked to disease progression
  - Microbiome-Based Diagnostics & Treatment Response: Machine learning-driven microbial biomarkers (AUC=0.971) expected to enhance IBD diagnosis, while gut microbiota profiling (88% accuracy) will help differentiate Crohn's disease from intestinal tuberculosis. Gut microbial diversity and anti-inflammatory commensals (Bacteroides uniformis, Roseburia spp.) could predict vedolizumab response, reinforcing the role of the microbiome in therapy success and precision medicine

Key Topics From Notable Presentations (4/5)

- **Global IBD Trends & Economic Burden:** The rising incidence of IBD in Asia and Africa will be a key focus, with UC cases projected to increase by 30% in the next decade
  - Rising Mental Health & Cancer Risks: Sessions will explore the PIBD patients will have nearly double the risk of depression/anxiety, with perianal disease and multiple biologics as key factors. Korean IBD patients likely to face a 57% higher malignancy risk, emphasizing the need for early intervention and enhanced surveillance
  - Evolving Treatment & Outcomes: Discussions are positioned to highlight that CD prevalence in Brazil is expected rise by 288%, with biologics reducing hospitalizations (59%) and surgeries (55%), but access challenges will likely persist. Biologic/JAKi therapy expected to cut hospitalization risk by over 50%, while immune checkpoint inhibitors (ICIs) expected to trigger IMEC in 46% of IBD patients, yet 72% will continue therapy

Key Topics From Notable Presentations (5/5)

- **Patient-Reported Outcomes & Digital Health Innovations:**
  - Enhancing Patient Engagement & Treatment Response: The PROMOTION study is expected to show that a nurse-led intervention can boost PRO response rates to 71.8% (p=0.004), though long-term engagement would decline, emphasizing the need for sustained motivational strategies. Risankizumab maintenance therapy data to show that treatment significantly improves PROs (urgency, pain, fatigue) and reduces FCP levels, reinforcing Risankizumab's role in long-term UC management
  - Diet, Access to Care & QoL Improvements: Data show that the Tasty&Healthy™ (T&H) diet maintains remission in 49% of CD patients, offering a flexible alternative to strict dietary protocols. In Saudi Arabia, delayed UC diagnosis and underuse of newer therapies highlights the need for better awareness and access. Vedolizumab data are expected to demonstrate rapid symptom relief and QoL improvements in Chinese IBD patients, validating its real-world effectiveness

Focus of Key Corporate Supported Symposia at ECCO 2025 (1/4)

- **Eli Lilly:**
  - Focus Areas: IL-23p19 Inhibition and Mirikizumab in IBD Management
  - Presentations are expected to showcase comprehensive Crohn's disease management via IL-23p19 inhibition and long-term remission strategies with Mirikizumab in UC
- **Takeda:**
  - Focus Areas: Early vs. Personalized Treatment Approaches in Crohn's Disease & Mucosal Healing in UC
  - Sessions will explore the benefits of early intervention versus personalized treatment strategies in CD and navigating the path to disease modification in UC
- **Pfizer:**
  - Focus Areas: Expanding the Role of S1P Receptor Modulators and JAK Inhibitors in UC
  - Sessions are expected to highlight advancements in targeted therapies for UC, focusing on the clinical applications, efficacy, and safety profiles of S1P receptor modulators and JAK inhibitors in disease management

Focus of Key Corporate Supported Symposia at ECCO 2025 (2/4)

- **AbbVie:**
  - Focus Areas: Optimizing IL-23 and JAK Inhibitor Use in IBD
  - Multiple sessions will highlight the importance of IL-23 and JAK inhibitors in both Crohn's disease and UC, emphasizing early and correct treatment initiation
- **Janssen (JnJ):**
  - Focus Areas: Broadening Treatment Strategies in IBD
  - Sessions will delve into expanding therapeutic approaches beyond conventional treatments in Crohn's disease and UC
- **Medtronic:**
  - Focus Areas: Panenteric Capsule Endoscopy in Quiescent Crohn's Disease
  - Insights into using capsule endoscopy as a treat-to-target approach for CD monitoring

Focus of Key Corporate Supported Symposia at ECCO 2025 (3/4)

- **Abivax:**
  - Focus Areas: Obefazimod as a Novel UC Therapy
  - Sessions will introduce obefazimod, an investigational treatment for ulcerative colitis, highlighting its novel mechanism of action, clinical trial progress, and potential therapeutic benefits
- **AlfaSigma:**
  - Focus Areas: Real-world Evidence for Filgotinib in Moderately Active UC
  - Discussions will focus on real-world evidence for filgotinib in UC management, examining patient outcomes, treatment effectiveness, and practical considerations for clinical use
- **Dr. Falk:**
  - Focus Areas: Strategic Drug Utilization in IBD Treatment
  - Discussions are positioned to highlight the strategic timing of therapy transitions in IBD management, addressing both the risks of overtreatment and undertreatment. Experts will discuss clinical decision-making factors, biomarkers for therapy adjustment, and real-world case studies to guide individualized treatment plans

Focus of Key Corporate Supported Symposia at ECCO 2025 (4/4)

- **Celltrion:**
  - Focus Areas: Early Intervention in IBD with Advanced Treatment Strategies
  - Discussions on the benefits of early advanced therapy in IBD, covering predictive biomarkers, disease stratification, & RW evidence supporting proactive treatment to improve long-term outcomes
- **MSD:**
  - Focus Areas: Enhancing Comprehensive IBD Patient Care
  - A holistic approach to IBD care integrating medical, nutritional, and psychological strategies. Experts will discuss multidisciplinary models, patient engagement, and innovative therapies to enhance disease control and quality of life
- **Roche:**
  - Focus Areas: TL1A Inhibition as a Novel IBD Treatment Approach
  - This session will explore TL1A inhibition as a promising IBD therapy, discussing its mechanism, clinical trial data, and its role in inflammation control. Experts will highlight patient selection and positioning within treatment strategies

Notable Presentations at ECCO 2025

Notable Presentations at ECCO 2025
Clinical Trials & Comparative Studies (1/7)

Date	Title	Author	Summary
20 Feb 2025	Tasty&Healthy Flexible Diet Induces clinical and biological Remission in Children and Young Adults with Mild-Moderate Crohn's Disease similar to EEN: results from the "TASTI-MM" randomized, physician-blinded, controlled trial	Luba Plotkin	• **Introduction:** EEN is effective for Crohn's disease (CD) remission but has adherence challenges. The T&H diet excludes processed food, gluten, red meat, and most dairy without requiring PEN. This study compared T&H to EEN in pediatric and young adult CD patients • **Methodology**: An RCT (NCT#04239248) randomized 83 patients (ages 6-25) to T&H (n=41) or EEN (n=42) for 8 weeks. Physicians were blinded. Clinical remission, MINI index, and biomarkers (CRP, ESR, calprotectin) were monitored • **Results:** T&H had higher tolerability (88% vs. 52%, p<0.001). Remission rates were similar (56% vs. 38%, p=0.1). Biomarker reductions were comparable. Mild adverse events occurred in both groups. • **Conclusions:** T&H was as effective as EEN but better tolerated, offering a flexible alternative for mild-moderate CD
20 Feb 2025	Risk of immune mediated inflammatory diseases associated with anti-TNFs and ustekinumab in Crohn's disease: a nationwide population-based cohort study	Julien Kirchgesner	• **Introduction:** Biologics have been linked to paradoxical immune-mediated inflammatory diseases (IMIDs) in Crohn's disease (CD). While anti-TNF therapies have been studied, data on ustekinumab remain limited. This study assessed the risk of developing a second IMID in CD patients switching to a second anti-TNF or ustekinumab • **Methodology**: A French healthcare database (2008-2022) identified 13,994 CD patients without prior IMIDs switching therapies. The primary outcome was incident IMID occurrence. Propensity score weighting controlled for confounders. Hazard ratios (HR) were calculated. • **Results:** 578 new IMIDs occurred (23.2/1000 PY), mainly psoriasis (60.6%) and ankylosing spondylitis (20.2%). Ustekinumab was associated with a lower IMID risk than anti-TNF (HR=0.63, CI 95%[0.48-0.81], p<0.001) • **Conclusions:** Ustekinumab showed a significantly lower risk of second IMID compared to anti-TNF, supporting its favorable safety profile in CD management

Notable Presentations at ECCO 2025
Clinical Trials & Comparative Studies (2/7)

Date	Title	Author	Summary
20 Feb 2025	Efficacy and Safety of Risankizumab in Patients With Moderate to Severe Crohn's Disease With 3 Years of Treatment: Results From the FORTIFY Open-Label Long-Term Extension	Marc Ferrante	• **Introduction:** The FORTIFY open-label extension (OLE) evaluates the long-term efficacy and safety of risankizumab (RZB), an IL-23p19 inhibitor, in moderate-to-severe Crohn's disease (CD). This report presents the full two-year data with all patients completing the week 152 visit • **Methodology**: Patients completing 52 weeks of RZB maintenance (180mg or 360mg every 8 weeks) continued in the OLE. Clinical and endoscopic efficacy was assessed using stool frequency/abdominal pain scores, CDAI remission, and endoscopic response/remission. Safety analysis included treatment-emergent adverse events (TEAEs) • **Results:** Among 1,148 patients, efficacy remained stable through week 152 across all endpoints. Rescue therapy recipients also showed improvements. TEAEs were consistent with RZB's known safety profile. • **Conclusions:** RZB demonstrated durable clinical and endoscopic efficacy with no new safety risks, supporting its long-term use in CD
20 Feb 2025	Infliximab induction fails to reach targets in Perianal Fistulizing Crohn's Disease: first results from the ATLANTIC study	Lieven Mulders	• **Introduction:** Infliximab (IFX) serum concentrations correlate with better outcomes in perianal fistulizing Crohn's disease (PFCD), yet its pharmacokinetics in PFCD remains unclear. This study assessed IFX trough levels (TLs) in PFCD compared to luminal Crohn's disease (CD) patients • **Methodology**: A cohort of 149 patients (63 PFCD, 86 CD) initiating standard-dose IFX (5 mg/kg) was analyzed. Serum TLs were measured from week 2 to 26, with predefined target TLs for PFCD (20, 15, and 10 µg/mL at weeks 2, 6, and 14). Statistical analyses assessed differences between groups • **Results:** During induction, fewer PFCD patients achieved target IFX TLs than CD patients (43% vs. 57%, p=0.038). At week 14, median IFX TL was significantly lower in PFCD (2.8 vs. 4.8 µg/mL, p=0.014). Target TL at week 14 was reached in only 9% of PFCD patients versus 46% of CD patients (p<0.0001). Anti-drug antibody development was similar (16% vs. 12%, p=0.169) • **Conclusions:** Standard IFX dosing results in suboptimal TLs in PFCD, potentially prolonging disease burden. Optimized dosing strategies may be necessary for effective PFCD management

Notable Presentations at ECCO 2025
Clinical Trials & Comparative Studies (3/7)

Date	Title	Author	Summary
20 Feb 2025	Etrasimod for the treatment of Ulcerative Colitis: Up to 4 years of safety data from the global clinical programme	Séverine Vermeire	• **Introduction:** Etrasimod, a selective sphingosine 1-phosphate (S1P) receptor modulator, is being evaluated for long-term safety, tolerability, and efficacy in moderately to severely active ulcerative colitis (UC). This updated analysis assesses cumulative safety data with up to four years of exposure • **Methodology**: Data from completed and ongoing phase 2 and 3 studies, including open-label extensions, were analyzed. Treatment-emergent adverse events (TEAEs) and exposure-adjusted incidence rates (IRs) per patient-year (PY) were assessed • **Results:** Among 1,196 patients (1,619.5 PYs), most TEAEs were nonserious and rarely led to discontinuation. Serious infections, herpes zoster (IR ≤0.02), macular edema (<0.01%), and malignancies (0.4%) were infrequent. No Hy's law cases or serious cardiovascular adverse events were observed • **Conclusions:** Etrasimod demonstrated a stable, favorable safety profile over four years, supporting its long-term tolerability in UC treatment
20 Feb 2025	Efficacy and safety of upadacitinib after 4 years of treatment in patients with moderately to severely active ulcerative colitis: interim long-term data from the phase 3 open-label extension study (U-ACTIVATE)	Remo Panaccione	• **Introduction:** Upadacitinib (UPA), a Janus kinase inhibitor approved for ulcerative colitis (UC), has demonstrated sustained efficacy and safety in long-term studies. This analysis evaluates its 4-year efficacy and safety from the U-ACTIVATE long-term extension (LTE) trial • **Methodology**: Patients completing induction and 52-week maintenance entered LTE (up to 144 weeks). Clinical remission (CR), endoscopic improvement (EI), and endoscopic remission (ER) were assessed using observed (AO) and modified non-responder imputation (mNRI) methods. Safety was analyzed via exposure-adjusted event rates (EAERs) per 100 patient-years (PY) • **Results:** At LTE week 144, over half of patients-maintained CR and ER with UPA15 and UPA30. Safety data (1,043.5 PY) showed similar serious TEAE rates across groups. One death (COVID-19) was reported • **Conclusions:** UPA maintained clinical and endoscopic benefits over four years, with a stable safety profile, supporting its long-term use in UC

Notable Presentations at ECCO 2025
Clinical Trials & Comparative Studies (4/7)

Date	Title	Author	Summary
21 Feb 2025	Upadacitinib for induction of remission in pediatric Crohn's disease: An international multicenter study	Anat Yerushalmy-Feler	• **Introduction:** Data on upadacitinib (UPA) in pediatric Crohn's disease (CD) are limited. This study evaluates its effectiveness and safety as induction therapy in children with refractory CD • **Methodology**: A multicenter retrospective study analyzed 100 pediatric CD patients from 30 centers worldwide (2022–2024). All had prior biologic exposure. Clinical, laboratory, and imaging data were assessed at week 8. The primary outcome followed the intention-to-treat (ITT) principle • **Results:** At week 8, clinical response, remission, and corticosteroid-/enteral nutrition-free remission (CFR) were 75%, 56%, and 52%, respectively. CRP normalized in 68%, and fecal calprotectin <150 mcg/g was achieved in 58%. AEs occurred in 24%, with acne (12 cases) most common; two cases led to discontinuation • **Conclusions:** UPA demonstrated efficacy in refractory pediatric CD, but potential AEs should be considered in clinical decision-making
21 Feb 2025	Efficacy and Safety of Vedolizumab Combined with Upadacitinib in Moderate-to-Severe Ulcerative Colitis: A Multicenter, Prospective, Randomized Controlled Trial	Min Zhi	• **Introduction:** Combination therapy for moderate-to-severe ulcerative colitis (UC) is an emerging strategy. This study compares vedolizumab (VDZ) plus upadacitinib (UPA) versus VDZ monotherapy to evaluate efficacy and safety. • **Methodology**: In a multicenter, randomized controlled trial, 61 UC patients received either VDZ (300mg) plus UPA (45mg daily for 8 weeks) or VDZ alone. Clinical, endoscopic, and inflammatory marker responses were assessed at weeks 8 and 54 • **Results:** At week 8, combination therapy showed higher clinical (63.4% vs 34.3%, p=0.037) and endoscopic response rates (61.5% vs 40.0%, p=0.042). Clinical remission (30.8% vs 11.4%) and histological remission (34.6% vs 14.3%) improved numerically but were not statistically significant. • **Conclusions:** VDZ+UPA demonstrated superior early clinical and endoscopic outcomes over VDZ alone. Larger trials are needed to validate long-term efficacy

Notable Presentations at ECCO 2025
Clinical Trials & Comparative Studies (5/7)

Date	Title	Author	Summary
21 Feb 2025	Efficacy and safety of subcutaneous guselkumab induction therapy in patients with Ulcerative Colitis: Results through week 12 from the phase 3 ASTRO study	Laurent Peyrin-Biroulet	• **Introduction:** Guselkumab, a dual-acting IL-23p19 inhibitor, has shown efficacy in ulcerative colitis (UC) with intravenous induction and subcutaneous (SC) maintenance (QUASAR). This ASTRO trial evaluated the efficacy and safety of SC induction in moderate-to-severe UC • **Methodology**: A phase 3, randomized, placebo-controlled trial included 418 UC patients stratified by prior biologic (BIO)/JAK/S1P inhibitor use. Patients received GUS 400 mg SC (three doses) followed by 200 mg SC q4w (n=140) or 100 mg q8w (n=139), or placebo (n=139). The primary endpoint was clinical remission at week 12, with secondary endpoints including response, symptomatic remission, endoscopic improvement, and histo-endoscopic mucosal improvement (HEMI) • **Results:** At week 12, significantly more GUS-treated patients achieved clinical remission (27.6% vs. 6.5%, p<0.001) and secondary endpoints (clinical response 65.6% vs. 34.5%, symptomatic remission 51.3% vs. 20.9%, all p<0.001). Outcomes were favorable across prior therapy subgroups. Adverse event rates were similar to placebo • **Conclusions:** ASTRO confirmed the efficacy of GUS SC induction in UC with a favorable safety profile, complementing prior IV data and supporting SC use in clinical practice
21 Feb 2025	The Choice of Endoscopic Surveillance Strategies for IBD Patients Among Taiwanese Physicians: An Anonymous Questionnaire Survey	Y.Y. Chen	• **Introduction:** Inflammatory bowel disease (IBD) increases colorectal neoplasia (CRN) risk, necessitating regular colonoscopic surveillance. Despite guidelines favoring chromoendoscopy for enhanced detection, physician adoption varies. This study evaluates CRN screening strategies among Taiwanese physicians. • **Methodology**: An anonymous online survey was distributed at gastroenterology conferences and social media groups. Physicians' demographics, patient caseload, endoscopic preferences, and biopsy strategies were assessed. Statistical analysis examined correlations between physician characteristics and endoscopic choices. • **Results:** Among 53 respondents, 47.2% used high-definition white light endoscopy (HD-WLE), 32.1% used standard WLE, and 20.8% used virtual chromoendoscopy; none used traditional chromoendoscopy. IEE was preferred by 77.4%, particularly among physicians managing more IBD patients (p=0.018). Targeted biopsy was widely adopted (86.8%). • **Conclusions:** Chromoendoscopy use is low in Taiwan, with IEE preferred among physicians managing higher IBD caseloads. Strategies are needed to enhance guideline adherence and optimize CRN detection

Notable Presentations at ECCO 2025
Clinical Trials & Comparative Studies (6/7)

Date	Title	Author	Summary
21 Feb 2025	Long-term effectiveness and safety of ustekinumab dose escalation in patients with refractory ulcerative colitis: a multicenter retrospective cohort study	L. Van Lierop	• **Introduction:** Ustekinumab dose escalation (DE) is used to recapture response in refractory ulcerative colitis (UC), but its long-term effectiveness remains unclear. This study assessed real-world outcomes of ustekinumab DE in refractory UC • **Methodology**: A multicenter retrospective cohort study included 121 refractory UC patients who received IV ustekinumab induction (2016–2021). Outcomes were compared between DE and non-DE groups. The primary endpoint was corticosteroid-free clinical remission. Drug persistence was analyzed using Kaplan-Meier estimates • **Results:** DE was performed in 67% of patients. Corticosteroid-free remission was achieved in 53.2% (DE) vs. 59.0% (non-DE). Ustekinumab persistence at 2 years was lower in DE patients (40% vs. 79%). Only two patients discontinued due to adverse events • **Conclusions:** Ustekinumab DE is frequently used in refractory UC and is safe, but long-term effectiveness and persistence beyond two years remain limited
21 Feb 2025	Comparative efficacy of all available pharmaceutical therapies for moderate to severe Crohn's disease: a systematic review and network meta-analysis.	M. Versteegh	• **Introduction:** The expanding therapeutic landscape for Crohn's disease (CD) provides more treatment options but lacks direct comparative evidence. This study systematically evaluates the efficacy and discontinuation rates of all pharmaceutical therapies in moderate-to-severe CD • **Methodology**: A systematic review and network meta-analysis (NMA) of 77 phase III randomized controlled trials (RCTs) (until October 2023) assessed induction and maintenance of clinical response/remission and drug discontinuation rates. SUCRA rankings were reported for biologic-naïve and biologic-exposed patients • **Results:** In biologic-naïve patients, adalimumab (high induction) ranked highest for induction, and infliximab/azathioprine for maintenance. In biologic-exposed patients, upadacitinib ranked highest for both induction and maintenance. Discontinuation was highest for methotrexate, azathioprine, and upadacitinib • **Conclusions:** Anti-TNF combination therapy remains most effective in biologic-naïve patients, while upadacitinib is preferred in biologic-exposed patients. Differences between treatments were small, supporting the continued role of conventional therapies

Notable Presentations at ECCO 2025
Clinical Trials & Comparative Studies (7/7)

Date	Title	Author	Summary
21 Feb 2025	Comparative Effectiveness and Safety of Upadacitinib and Vedolizumab in Anti-TNF Experienced Patients with Ulcerative Colitis: A Retrospective Study	N. Sror	• **Introduction:** Upadacitinib (UPA) and vedolizumab (Vedo) are approved for moderate-to-severe ulcerative colitis (UC) following anti-TNF failure, but comparative real-world data are limited. This study evaluates their effectiveness and safety as second-line therapies. • **Methodology**: A retrospective study (2015–2024) included 88 UC patients (Vedo: n=66, UPA: n=22) treated for ≥14 weeks post anti-TNF failure. Clinical response (≥2-point reduction in Partial Mayo Score), remission (score <2), fecal calprotectin changes, and adverse events (AEs) were compared. • **Results:** Clinical response and remission rates were similar, with a trend favoring UPA (response aOR=6.85, p=0.09; remission aOR=3.7, p=0.14). Fecal calprotectin reduction was greater with UPA but not significant (p=0.13). UPA-treated patients had significantly more AEs (aOR=8.72, p=0.04), but no major AEs leading to discontinuation. • **Conclusions:** UPA and Vedo showed comparable effectiveness, with a trend favoring UPA. Higher AE rates in UPA-treated patients suggest treatment decisions should consider disease severity and comorbidities
21 Feb 2025	Predictors for maintained remission at one year following appendectomy in ulcerative colitis: a post-hoc analysis of the ACCURE trial	E. Visser	• **Introduction:** The ACCURE trial demonstrated that appendectomy reduces clinical relapses in ulcerative colitis (UC) patients in remission without advanced therapies. This post-hoc analysis evaluates baseline predictors of maintained remission following appendectomy. • **Methodology**: Appendectomy patients from the ACCURE trial were analyzed, excluding those without endoscopic follow-up or with Crohn's disease. Maintained remission was defined as the absence of clinical relapse with an endoscopic Mayo score ≤1 at one year. Logistic regression identified baseline characteristics associated with maintained remission, comparing findings to a non-appendectomy control group. • **Results:** Among 82 appendectomy patients, 62.2% maintained remission. Younger age (OR 0.68 per 10 years, p=0.04), fewer exacerbations, shorter disease duration, and baseline Mayo score of 0 were associated with remission. In contrast, older age predicted remission in the control group (OR 1.61 per 10 years). • **Conclusions:** Younger age predicts maintained remission following appendectomy, suggesting a potential role in refining patient selection for surgical intervention in UC management

Notable Presentations at ECCO 2025
Biomarkers & Personalized Medicine (1/5)

Date	Title	Author	Summary
20 Feb 2025	HLA-DQA1*05:01 is associated with loss of response to infliximab, and HLA DQA1*05:05 with loss of response to adalimumab in the Oxford OASIS study	Nicola Ternette	• **Introduction:** The HLA-DQA105 allele has been associated with immunogenicity to infliximab and adalimumab in Crohn's disease (CD). However, emerging data suggest distinct allele-specific risks. This study from the Oxford OASIS cohort evaluates the differential impact of HLA-DQA105:01 and HLA-DQA1*05:05 on loss of response (LOR) to anti-TNF therapy • **Methodology**: A retrospective analysis of 899 IBD patients (CD: 599, UC: 279) examined associations between HLA alleles and primary/secondary LOR to infliximab or adalimumab. Kaplan-Meier and Cox proportional hazard models assessed immunogenicity risks • **Results:** HLA-DQA105:01 was significantly associated with primary LOR to infliximab (HR=1.8, p=0.0368) but not adalimumab (HR=0.754, p=0.338). Conversely, HLA-DQA105:05 was associated with LOR to adalimumab (HR=1.96, p=0.0086) but not infliximab (HR=1.49, p=0.178). Grouping both alleles under HLA-DQA1*05 masked these drug-specific associations • **Conclusions:** HLA-DQA105:01 and HLA-DQA105:05 confer distinct immunogenicity risks for infliximab and adalimumab, respectively. High-resolution HLA typing is necessary for precise risk stratification and individualized anti-TNF therapy selection
21 Feb 2025	Early serum and faecal cytokines predict clinical outcomes in Acute Severe Ulcerative Colitis: results from PREDICT-UC	Christopher Li Wai Suen	• **Introduction:** Acute severe ulcerative colitis (ASUC) is a medical emergency with variable treatment responses. This study evaluates whether early serum and fecal cytokine levels predict corticosteroid and infliximab (IFX) response, as well as colectomy risk • **Methodology**: A multicenter cohort (PREDICT-UC trial) analyzed 190 ASUC patients. Serum and fecal IL-6 and TNF levels were measured at screening, and at days 1 and 3 post-IFX in steroid-refractory patients. IFX response was assessed by day 7, and colectomy outcomes were tracked at 3 months • **Results:** At screening, higher serum IL-6 ($p<0.001$) and fecal TNF ($p=0.032$) predicted corticosteroid failure. IFX non-responders had persistently elevated serum IL-6 ($p<0.005$). By day 3, fecal TNF fell below detection in IFX responders but remained elevated in non-responders ($p=0.006$). Persistent day 3 fecal TNF predicted colectomy ($p=0.004$, AUC=0.72), with a threshold ≥7.07 pg/mL showing high specificity (89.8%) • **Conclusions:** Early cytokine profiling predicts ASUC outcomes. Persistent fecal TNF post-IFX may guide early IFX re-dosing, while elevated IL-6 suggests alternative immune pathways requiring non-TNF-targeted therapy

Notable Presentations at ECCO 2025
Biomarkers & Personalized Medicine (2/5)

Date	Title	Author	Summary
21 Feb 2025	Evaluating tryptophan as a biomarker for treatment success in Inflammatory Bowel Disease patients undergoing therapy	C. Maaß	• **Introduction:** Tryptophan (Trp) metabolism is linked to inflammation, but its role in predicting treatment response in IBD remains unclear. This study evaluates Trp as a biomarker compared to CRP • **Methodology**: Serum Trp and CRP levels were analyzed in UC (n=15) and CD (n=10) patients during induction with biologics, including interleukin (n=11) and JAK inhibitors (n=8) • **Results:** Trp inversely correlated with CRP (rs=-0.219, p=0.045), significant in UC (p=0.003) but not CD. Stronger correlations were seen with interleukin (p=0.001) and JAK inhibitors (p=0.007), but not TNF-α or integrin inhibitors • **Conclusions:** Trp levels may serve as an early marker of treatment response, particularly in UC patients receiving interleukin or JAK inhibitors
21 Feb 2025	Single cell RNA sequencing analysis of specific cell subsets for predicting anti-TNF treatment response in Korean patients with ulcerative colitis	H.G. Kim	• **Introduction:** Epithelial barrier disruption and mucosal imbalance drive ulcerative colitis (UC). Single-cell RNA sequencing (scRNA-seq) offers insights into intestinal cell characteristics, yet data on Asian UC patients receiving anti-TNF therapy remain limited. This study examines cellular changes post-treatment in Korean UC patients • **Methodology**: Sigmoid biopsies from six biologic-naïve UC patients were analyzed via scRNA-seq before anti-TNF therapy. At 52 weeks, biopsies from two responders were re-evaluated. Cell populations were compared between responders and non-responders • **Results:** Non-responders had lower ILC2, ILC3, CD8/CD4 T cells, and NK cells but increased mast cells, stromal fibroblasts, and endothelial cells. Responders showed reduced inflammatory cell subsets post-treatment • **Conclusions:** Anti-TNF response in Korean UC patients correlates with distinct immune and stromal cell changes

Notable Presentations at ECCO 2025
Biomarkers & Personalized Medicine (3/5)

Date	Title	Author	Summary
21 Feb 2025	Correlation between trough levels of risankizumab and clinical and biological remission in patients with moderate to severe Crohn's disease: a retrospective multicenter study (RISE-CD)	L. Sequier	• **Introduction:** Risankizumab (RZB), an IL-23p19 inhibitor, is effective in Crohn's disease (CD), but its correlation with trough levels remains unclear. This study investigates RZB levels and clinical/biological remission at 6, 12, and 18 months • **Methodology**: A multicenter retrospective study included 43 CD patients failing prior biotherapies. Remission was defined as HBI <4, CRP <5 mg/L, and fecal calprotectin <250 µg/g. RZB levels were measured via ELISA • **Results:** At 12 months, 30.2% achieved remission, with higher RZB levels (8.26 vs. 4.44 µg/mL, p=0.002). The optimal threshold was 7.7 µg/mL. Persistence was 72% at 18 months, with no anti-RZB antibodies • **Conclusions:** Higher RZB levels correlate with remission, supporting therapeutic drug monitoring
21 Feb 2025	Multi-omics analysis of Crohn's Disease trajectory from active to remission reveals that the altered ileal anti-bacterial epithelial signals and pathogenic microbial composition and metabolomics persist despite normalizing ileal immune signals during remission	Y. Haberman Ziv	• **Introduction:** Understanding gut factors in Crohn's disease (CD) is crucial for refining treatment. This study used multi-omics to compare active, newly diagnosed CD, remission, and healthy controls • **Methodology**: Ileal transcriptomics, microbiome, and metabolomics were analyzed in 193 subjects: 38 active CD, 78 in remission, and 77 controls • **Results:** Remission normalized immune markers but showed persistent epithelial antimicrobial gene expression (DUOX2, CEACAM5/6) and pathogenic microbiome signatures, including oral bacteria dislocation. 91% of altered metabolites remained abnormal • **Conclusions:** Despite immune normalization, epithelial and microbial imbalances persist in remission, highlighting the need for therapies targeting the epithelial-microbiome axis alongside immune suppression

Notable Presentations at ECCO 2025
Biomarkers & Personalized Medicine (4/5)

Date	Title	Author	Summary
21 Feb 2025	Association between stool infection and C - reactive protein levels in Ulcerative Colitis: A retrospective analysis in Albania	M. Sina Dr.	• **Introduction:** Stool infections worsen ulcerative colitis (UC) symptoms and treatment outcomes. This study examines the relationship between stool infections and C-reactive protein (CRP) levels in UC patients • **Methodology**: A retrospective study (April–October 2024) analyzed 25 active UC patients. Stool samples were tested for pathogens, and CRP levels were measured. Statistical analyses assessed infection-CRP correlations • **Results:** Stool infections were present in 40% of patients. CRP levels were significantly higher in infected patients (13.09 vs. 4.41 mg/L, p=0.033). CRP correlated with infection (r=0.420, p=0.041), though logistic regression did not reach significance (p=0.076) • **Conclusions:** Stool infections in UC are linked to increased CRP, but CRP alone may not reliably predict infection risk. Further research is needed
21 Feb 2025	Residual TYK2 signalling is associated with non-response to vedolizumab and systemic TNF inhibitors among patients with ulcerative colitis: post hoc analyses of mucosal transcriptome data	Maria Paraskevopoulou	• **Introduction:** Understanding treatment response mechanisms in inflammatory bowel disease (IBD) is crucial for drug development. This study uses transcriptomic analysis to identify biomarkers of response to vedolizumab (VDZ) and adalimumab (ADA) in ulcerative colitis (UC) • **Methodology**: In the VARSITY trial (n=769), UC patients were randomized to VDZ (n=383) or ADA (n=386) for 52 weeks. Single-cell RNA sequencing and gene module analysis assessed biomarkers at baseline, Week 14, and Week 52 in responders and non-responders. TYK2-dependent pathways, including IL-23 and type I interferon (IFN), were analyzed • **Results:** Non-responders to both VDZ and ADA showed elevated JAK/STAT and IFN signaling. IL-23 and IFN pathways remained incompletely resolved in responders. Unlike VDZ, ADA had no baseline predictors of response • **Conclusions:** TYK2-dependent signaling is a biomarker of non-response to VDZ and ADA, supporting further investigation of TYK2 inhibitors in IBD treatment

Notable Presentations at ECCO 2025
Biomarkers & Personalized Medicine (5/5)

Date	Title	Author	Summary
21 Feb 2025	Predicting response to anti-tumour necrosis factor-alpha therapy-α in fibrostenotic Crohn's disease using infra-red microspectroscopy	Charlotte Keung	• **Introduction:** Fibrostenotic Crohn's disease lacks biomarkers predicting response to anti-TNF therapy. This study evaluates Fourier-transform infrared (FTIR) spectroscopy as a predictive tool • **Methodology**: Biopsies from 62 Crohn's patients (24 from STRIDENT2) and 12 controls were analyzed using FTIR spectroscopy. Spectral data were processed using partial least squares discriminant analysis (PLSDA) • **Results:** Baseline spectral signatures predicted 12-month adalimumab response with AUC >0.9 across MRI, IUS, and biomarker responses. Key biomarkers included protein (1651, 1543 cm^{-1}), lipid (1750, 1395 cm^{-1}), and collagen (1236 cm^{-1}) bands • **Conclusions**: FTIR spectroscopy detects biochemical fingerprints predictive of anti-TNF response in fibrostenotic Crohn's disease, supporting its potential as a prognostic tool
21 Feb 2025	Distinct tryptophan metabotypes associate with disease activity, treatment escalation and future disease progression in Inflammatory Bowel Disease	Danielle Harris	• **Introduction:** The kynurenine pathway is upregulated in IBD, influencing disease activity through bioactive metabolites. This study identifies metabolic subgroups (Trp metabotypes) and assesses their prognostic value • **Methodology**: Serum levels of 16 Trp-related metabolites were analyzed in a German cohort (UC: 82, CD: 52) and validated in cohorts from France, the USA, and Norway. K-means clustering identified metabotypes linked to disease activity and progression • **Results:** Four metabotypes emerged, with High/Low Kyna groups showing opposite disease associations. High Quin correlated with severe disease. Metabotypes predicted escalation to biologics, steroid use, and hospitalization • **Conclusions:** Trp metabolism profiles predict IBD progression, suggesting potential therapeutic targets

Notable Presentations at ECCO 2025
Microbiome & Pathophysiology (1/4)

Date	Title	Author	Summary
20 Feb 2025	Reduced Gut Microbial Amino Acid Auxotrophies and Enhanced Tryptophan Degradation in Inflammatory Bowel Disease	Silvio Waschina	• **Introduction:** Microbial amino acid auxotrophies contribute to gut microbiome diversity and stability, yet their role in inflammatory bowel disease (IBD) remains unclear. This study investigates amino acid auxotrophies and metabolic alterations in ulcerative colitis (UC) and Crohn's disease (CD) • **Methodology**: Stool and serum samples from IBD patients (n=167) and healthy controls (n=190) across three cohorts (Germany, Belgium, US) underwent shotgun metagenomic sequencing and metabolic modeling. Serum metabolites were analyzed using targeted metabolomics • **Results:** IBD patients exhibited fewer tryptophan (Trp) auxotrophies, with increased Trp degradation pathways, particularly Trp decarboxylase and transaminase. These changes correlated with elevated CRP and specific serum metabolites, suggesting enhanced microbial-host Trp metabolism • **Conclusions:** IBD is associated with reduced Trp auxotrophies and increased Trp degradation, highlighting microbial competition and metabolic shifts that may influence disease progression and therapeutic targeting
20 Feb 2025	Shared and Distinct Features of the Gut Microbiome in Immune-mediated Inflammatory Diseases: Initial Analysis from the INTEGRATE Cohort Study	Hyun Sik Kim	• **Introduction:** IBD and AS share immune-mediated inflammatory pathways, but their microbiome interactions remain unclear. This study examines the oral-gut microbiome axis to identify shared and disease-specific microbial signatures • **Methodology**: The INTEGRATE study analyzed gut microbiomes from 254 IBD, 156 AS, and 194 controls using 16S rRNA sequencing, shotgun metagenomics, and metabolomics • **Results:** IBD had the lowest microbiome diversity, AS intermediate, and controls highest ($p<1.0e-12$). Clostridium bolteae and Blautia hansenii were enriched in both diseases • **Conclusions:** Distinct microbiome signatures exist in IBD and AS. Further analysis may identify microbial biomarkers for precision medicine

Notable Presentations at ECCO 2025
Microbiome & Pathophysiology (2/4)

Date	Title	Author	Summary
20 Feb 2025	Porphyromonas gingivalis secreted htpG disrupts TLR4/ PAPSS2-mediated mucin sulfation and aggravates ulcerative colitis	Aili Wang	• **Introduction:** Porphyromonas gingivalis (P.g) has been implicated in ulcerative colitis (UC) progression, but its exact mechanism remains unclear. This study investigates how P.g exacerbates colitis through mucosal barrier disruption • **Methodology**: Fecal samples from UC patients and healthy controls were analyzed for P.g abundance. A DSS-induced colitis mouse model was used to assess the impact of P.g on disease severity. Metagenomics, transcriptomics, and mass spectrometry were performed. • **Results:** P.g abundance correlated with UC severity. P.g worsened colitis by reducing mucin sulfation via TLR4-mediated suppression of PAPSS2. The HtpG protein contributed to inflammation • **Conclusions:** P.g exacerbates colitis by impairing mucin sulfation, revealing a potential therapeutic target
21 Feb 2025	Multi-analytical Approaches Reveal Robust Gut Microbial Biomarkers for Inflammatory Bowel Disease Diagnosis: A Large-scale Cohort Study	Jee-Won Choi	• **Introduction:** Gut microbiota dysbiosis plays a crucial role in IBD, but existing microbial biomarkers lack consistency and validation. This study evaluates multiple analytical methods to identify robust microbial biomarkers for IBD diagnosis • **Methodology**: A total of 3,762 participants (HC = 2,467, IBD = 1,293) underwent 16S rRNA sequencing. Biomarkers were identified using differential abundance analysis (DA), machine learning (ML), network analysis (NW), and literature curation (LC). Diagnostic performance was assessed using ensemble ML models • **Results:** ML-derived biomarkers demonstrated superior accuracy (AUC = 0.971), outperforming LC, DA, and NW. Biomarkers effectively distinguished CD from UC (AUC = 0.892) • **Conclusions:** ML-based biomarkers offer high diagnostic accuracy, supporting microbiome-based diagnostics for IBD

Notable Presentations at ECCO 2025
Microbiome & Pathophysiology (3/4)

Date	Title	Author	Summary
21 Feb 2025	Longitudinal study of the gut microbiome in patients with ulcerative colitis on biological treatment with vedolizumab	V. Robles Alonso	• **Introduction:** Gut microbiome alterations may influence treatment response in inflammatory bowel disease. This study examines gut microbial markers as predictors of response to vedolizumab in ulcerative colitis (UC) • **Methodology**: Shotgun metagenomic sequencing analyzed gut microbiomes in 21 UC patients before treatment and at weeks 12, 30, and 52. Remission was defined by SCAI <4, calprotectin <150 µg/g, CRP <0.5 mg/L, and Mayo index 0–1 • **Results:** Among 21 patients, 9 achieved remission. No patient with low microbial diversity (Chao1 <75) responded. Responders had stable microbiomes and increased anti-inflammatory commensals (Bacteroides uniformis, Roseburia spp.) • **Conclusions:** Gut microbiome stability and responsiveness may be prerequisites for vedolizumab efficacy in UC
21 Feb 2025	The gut microbiome at the onset of inflammatory bowel disease: A systematic review of the literature and unified bioinformatic synthesis of sequencing data from >1000 treatment naïve patients.	P. Rimmer	• **Introduction:** Understanding gut microbiome alterations in new-onset IBD remains limited. This study performs a secondary bioinformatic re-analysis (BA) of pre-treatment microbiome datasets using updated taxonomy from a systematic review • **Methodology**: MEDLINE and Embase searches identified 31 eligible studies, with 18 meeting criteria for BA. A unified QIIME2 pipeline analyzed 16S rRNA sequences from 1,743 individuals across 15 countries. Alpha and beta diversity, as well as bacterial composition, were assessed • **Results:** IBD patients exhibited reduced bacterial diversity, especially in pediatric UC. Oral genera (Fusobacterium, Neisseria) were enriched across subtypes. Short-chain fatty acid producers were diminished, but inconsistently across samples • **Conclusions:** This systematic approach confirms microbial diversity loss and oral bacterial enrichment in IBD, highlighting methodological variability and the need for standardization

Notable Presentations at ECCO 2025
Microbiome & Pathophysiology (4/4)

Date	Title	Author	Summary
21 Feb 2025	Unique gut microbiome profile can distinguish Intestinal Tuberculosis and Crohn`s Disease: An Indian patient cohort study	R. Banerjee	• **Introduction:** Distinguishing Crohn's disease (CD) from intestinal tuberculosis (ITB) in TB-endemic regions is challenging. This study examines gut microbiota differences and develops a machine-learning (ML)-based microbiome signature • **Methodology**: Fecal samples from 28 CD, 26 ITB, and 26 controls were analyzed using 16S rRNA sequencing. Taxonomy and functional pathways were assessed, and seven ML models tested classification accuracy • **Results:** CD had lower alpha diversity and a reduced Firmicutes:Bacteroidota ratio. Butyrate producers (Faecalibacterium, Eubacterium hallii) were depleted. KNN and XGBoost achieved 88% and 85% accuracy, respectively, in differentiating CD-ITB • **Conclusions:** Microbiome analysis combined with ML provides a promising non-invasive tool for distinguishing CD from ITB
21 Feb 2025	Microbiome Diversity and Taxonomic Differences in Quiescent Ulcerative Colitis: A Comparative Study of Proximal Extension	K.M. Lee	• **Introduction:** The gut microbiome influences ulcerative colitis (UC) progression, but its role in proximal extension during remission is unclear. This study examines microbiome differences in quiescent UC patients • **Methodology:** Fecal samples from 30 UC patients (17 without and 13 with proximal extension) were analyzed for microbial diversity and taxonomic composition. A random forest model classified patients based on microbiome signatures • **Results:** No significant alpha- or beta-diversity differences were found. Proximal extension patients had increased Bartonella and Klebsiella, while non-extension patients showed more Lactococcus. Machine learning identified key predictive taxa • **Conclusions:** Distinct microbiome signatures may help stratify UC patients, aiding microbiome-based diagnostics and treatment strategies

Notable Presentations at ECCO 2025
Epidemiology & Disease Burden (1/3)

Date	Title	Author	Summary
21 Feb 2025	Burden of depression and anxiety among patients with pediatric-onset Inflammatory Bowel Diseases: A nationwide study from the epi-IIRN	Firas Rinawi	• **Introduction:** Data on depression and anxiety in pediatric-onset inflammatory bowel disease (PIBD) are limited. This study assesses their prevalence and risk factors in a nationwide cohort • **Methodology:** Using the Israeli epi-IIRN database (2005–present), 4,960 PIBD patients were matched with 4,806 non-IBD controls. A Cox proportional hazards model analyzed predictors of depression/anxiety • **Results:** PIBD patients had a higher risk of depression/anxiety than controls (HR=1.9, p<0.001). Risk factors included perianal disease (HR=1.5), multiple biologics (HR=1.6), and hospitalizations (HR=1.4) in Crohn's disease, and steroid dependency (HR=1.5) in ulcerative colitis. Surgery reduced risk (HR=0.5) • **Conclusions:** PIBD is associated with increased mental health burden, underscoring the need for early psychological intervention
21 Feb 2025	Prevalence of the HLA-DQA1*05 phenotype in a cohort of Spanish patients with Inflammatory Bowel Disease, and its association with the response to first anti-TNF therapy in real-world settings.	M.L. De Castro Parga	• **Introduction:** HLA-DQA1*05 has been linked to anti-drug antibody formation, potentially impacting anti-TNF persistence in inflammatory bowel disease (IBD). This study examines its influence in bio-naïve IBD patients • **Methodology:** A prospective, single-center cohort study (2020–2023) assessed 209 bio-naïve IBD patients receiving anti-TNF therapy. HLA-DQA1*05 status was determined via PCR, and treatment persistence was analyzed using Kaplan-Meier curves • **Results:** HLA-DQA1*05 was detected in 38.8% of 205 tested patients. Anti-TNF discontinuation occurred in 41.6%, primarily infliximab (59.3%, p=0.009). However, anti-TNF persistence did not differ between allele carriers (36.7 months) and non-carriers (33.8 months) • **Conclusions:** HLA-DQA1*05 does not significantly impact anti-TNF persistence in bio-naïve IBD patients, contradicting prior immunogenicity concerns

Notable Presentations at ECCO 2025
Epidemiology & Disease Burden (2/3)

Date	Title	Author	Summary
21 Feb 2025	Risk of colitis in patients with Inflammatory Bowel Disease exposed to checkpoint inhibitors – a national Danish cohort study	E. Dahl	• **Introduction:** Patients with ulcerative colitis (UC), Crohn's disease (CD), and microscopic colitis (MC) are often excluded from immune checkpoint inhibitor (ICI) trials due to concerns over immune-mediated enterocolitis (IMEC). This study evaluates the real-world risk of IMEC in these patients. • **Methodology:** A nationwide Danish retrospective cohort (2010–2024) analyzed 85 patients with UC, CD, or MC treated with ICIs. IMEC incidence and treatment continuation rates were assessed and compared to a control group (n=138) • **Results:** IMEC occurred in 46% of patients but was mild in 15 cases. Patients treated with anti-PD-1/PD-L1 had a significantly higher IMEC risk (HR 4.93, p<0.001). CD patients had a lower IMEC risk than UC or MC (OR 0.07, p=0.02). • **Conclusions:** Despite high IMEC risk, 72% continued ICI therapy, suggesting careful management allows treatment continuation
21 Feb 2025	Temporal trends in surgery and hospitalization rates for crohn's disease in Brazil: A population-based study	J.A. Dos Reis Guerra	• **Introduction:** Crohn's disease (CD) prevalence is rising in Brazil, with biological therapies improving management. This study analyzes treatment trends and healthcare impact • **Methodology:** A retrospective study (2012–2022) examined CD patients in Brazil's public healthcare system. Treatment use, hospitalizations, and surgeries were analyzed using TT Disease Explorer® and R software • **Results:** CD prevalence increased 288.07%. AZA use declined, while IFX and ADA increased. Hospitalizations and surgeries dropped by 59.29% and 55.08%, respectively. Despite absolute growth, biological therapy access remained stable proportionally • **Conclusions:** Biological therapies improved CD outcomes, but access challenges persist. Better health record accuracy is needed for policy optimization and equitable treatment access

Notable Presentations at ECCO 2025
Epidemiology & Disease Burden (3/3)

Date	Title	Author	Summary
21 Feb 2025	Predictors of biologics/JAKi use, surgeries, and hospitalisations in a newly diagnosed cohort of IBD patients: Long-term outcomes from the nationwide EpidemIBD study of GETECCU	A. Garre	• **Introduction:** Predictive factors for biologic/JAK inhibitor (JAKi) use, surgeries, and hospitalizations in newly diagnosed inflammatory bowel disease (IBD) patients remain understudied. This study identifies key predictors over five years • **Methodology:** A nationwide, prospective Spanish registry followed 3,159 IBD patients (1,526 Crohn's disease [CD], 1,633 ulcerative colitis [UC]) diagnosed in 2017. Multivariate analyses assessed predictors of biologic/JAKi use, surgeries, and hospitalizations • **Results:** Younger age, aggressive CD phenotype, and greater UC extent predicted higher biologic/JAKi use. Smoking increased biologic use in CD but reduced it in UC. Biologic/JAKi therapy reduced hospitalization risk in both CD (HR=0.37) and UC (HR=0.45) but did not prevent surgeries • **Conclusions:** Better patient stratification is needed to optimize biologic/JAKi therapy and improve long-term outcomes
21 Feb 2025	Cancer incidence in patients with inflammatory bowel disease: A nationwide population-based study from Korea	J. Seo	• **Introduction:** Inflammatory bowel disease (IBD) is associated with an increased malignancy risk, but data on overall cancer incidence in Asian populations remain limited. This study evaluates malignancy risk in Korean IBD patients • **Methodology:** A nationwide analysis (2007–2022) of the Korean National Insurance claims database compared malignancy rates in IBD patients to the general population using standardized incidence ratios (SIRs) • **Results:** Among 66,392 IBD patients, 2,895 malignancies were identified. The overall SIR was 1.576 (95% CI, 1.519–1.634), with a significant increase in 2016–2021 (SIR 1.765) compared to 2010–2015 (SIR 1.037) • **Conclusions:** Korean IBD patients have an elevated malignancy risk, emphasizing the need for enhanced cancer surveillance strategies

Notable Presentations at ECCO 2025
Patient-Reported Outcomes & Quality of Life (1/3)

Date	Title	Author	Summary
20 Feb 2025	Optimizing patient-reported outcome measurement in an IBD care pathway: results of the PROMOTION study	Nikki Lembrechts	• **Introduction:** PROMs are critical for IBD assessment but have low engagement. The PROMOTION study evaluated response rates before and after a patient empowerment intervention • **Methodology:** A single-center, nurse-led study analyzed PRO responses in 811 IBD patients over nine months. An April 2024 intervention aimed to enhance participation. PRO-2 remission rates were assessed • **Results:** Response rates peaked at 71.8% post-intervention (p=0.004) but declined long-term. PRO-2 remission was 65.4% • **Conclusions:** A single intervention temporarily increased engagement. Sustained participation requires ongoing motivational strategies
21 Feb 2025	Impact of Risankizumab on Patient-reported Outcomes and Biomarkers Over Time: Post-Hoc Analysis of Phase 2b/3 INSPIRE and COMMAND Studies in Ulcerative Colitis	J. Lindsay	• **Introduction:** UC significantly impacts patients' quality of life. This post hoc analysis assessed PROs and biomarkers during risankizumab (RZB) maintenance therapy in patients who responded to RZB induction • **Methodology:** Patients from Phase 2b/3 trials were randomized to subcutaneous (SC) placebo, 180 mg RZB SC, or 360 mg RZB SC every 8 weeks. PROs included bowel urgency, abdominal pain, nocturnal bowel movements, and fatigue. Biomarkers examined were fecal calprotectin (FCP) and hs-CRP • **Results:** PROs and biomarkers improved with RZB maintenance, while placebo withdrawal led to symptom worsening. FCP levels remained lower in RZB groups • **Conclusions:** RZB sustains symptom improvements and reduces inflammatory burden in UC maintenance therapy

Notable Presentations at ECCO 2025
Patient-Reported Outcomes & Quality of Life (2/3)

Date	Title	Author	Summary
21 Feb 2025	Personalized Tasty&Healthy whole-food diet for maintaining remission in children and adults with Crohn's disease: results from the MyTasty open-label trial	L. Plotkin	• **Introduction:** The Tasty&Healthy™ (T&H) diet offers a flexible alternative to exclusive enteral nutrition for Crohn's disease (CD). This study evaluated its effectiveness in maintaining remission while reintroducing gluten and dairy • **Methodology:** A 16-week trial enrolled 43 CD patients in deep remission. Gluten and dairy were reintroduced monthly, with fecal calprotectin (FC) monitoring. Foods increasing FC >30% were re-excluded • **Results:** At week 16, 86% remained in clinical remission, 75% had FC <250, and 49% achieved deep remission. Nutritional adequacy was met except for calcium • **Conclusions:** T&H effectively maintained remission in 49% of patients, supporting its feasibility as a personalized dietary approach for CD
21 Feb 2025	Mapping the Ulcerative Colitis patient journey in Saudi Arabia from healthcare professionals' perspective: A cross-sectional non-interventional study	N. Azzam	• **Introduction:** Ulcerative colitis (UC) prevalence is rising in Saudi Arabia, with delayed diagnosis and management impacting patient outcomes. This study assesses treatment patterns, gaps, and areas for improvement from healthcare professionals' (HCPs) perspectives • **Methodology:** Sixty HCPs (45 gastroenterologists, 15 internists) were surveyed using structured interviews. Domains included symptom assessment, diagnostics, treatment sequencing, and barriers to optimal care • **Results:** HCPs prioritize clinical (53.3%) and endoscopic remission (35%). Common first-line treatments include steroids (34%), 5-ASAs (26%), and TNF-α inhibitors (21%). Newer therapies like S1P modulators are underutilized due to lack of approval and awareness • **Conclusions:** Addressing patient awareness and improving access to emerging therapies can enhance UC management in Saudi Arabia

Notable Presentations at ECCO 2025
Patient-Reported Outcomes & Quality of Life (3/3)

Date	Title	Author	Summary
21 Feb 2025	Patient-Reported Outcomes in Chinese Patients with Inflammatory Bowel Disease treated with Vedolizumab: A subgroup analysis of second interim analysis of VALUE study	M. Chen	• **Introduction:** Vedolizumab (VDZ), a gut-selective monoclonal antibody targeting α4β7 integrin, is approved in China for ulcerative colitis (UC) and Crohn's disease (CD). This study evaluates symptomatic relief and quality of life (QoL) using patient-reported outcomes (PROs) from the second interim analysis of the VALUE study • **Methodology:** This prospective, multicenter, single-arm observational study included UC/CD patients receiving VDZ (300 mg) at weeks 0, 2, 6, and every 8 weeks for 54 weeks. QoL was assessed via partial Mayo score, IBD questionnaires, and EuroQol metrics at baseline, days 3, 7, and 14, with statistical analysis summarizing effectiveness • **Results:** Among 500 patients (UC: 409, CD: 91), 61.6% were male. In UC, rectal bleeding and stool frequency improved significantly by day 14 (64.19% achieving RBS = 0 and SFS ≤1). In CD, APS ≤1 and LSFS ≤3 improved from 75% at baseline to 85.51% by day 14. IBDQ and EQ-5D-5L scores also improved significantly across both groups, demonstrating better QoL • **Conclusions:** VDZ rapidly improved symptoms and QoL in Chinese IBD patients, reinforcing its effectiveness in real-world settings

Key Corporate Supported Symposia Information

ECCO 2025 Key Industry Supported Sessions Information (1/3)

Date	Sponsor	Title
20 Feb 2025	Eli Lilly	Moving Into the Future: Comprehensive Management of Crohn's Disease with IL-23p19 Inhibition
20 Feb 2025	Takeda	Early vs Personalized Treatment for Crohn's Disease: Is There More Than One Path to Disease Control?
20 Feb 2025	Pfizer	Expanding the conversation on S1P receptor modulators and JAK inhibitors in UC
20 Feb 2025	AbbVie	Get it right from the start in Crohn's disease: Spotlight on IL-23 and JAK inhibitors in CD
20 Feb 2025	JnJ	Expanding the universe in IBD: Going beyond in Crohn's disease
20 Feb 2025	Medtronic	Panenteric capsule endoscopy as treat-to-target treatment guide in quiescent Cronh's disease – The CURE-CD randomized controlled trial

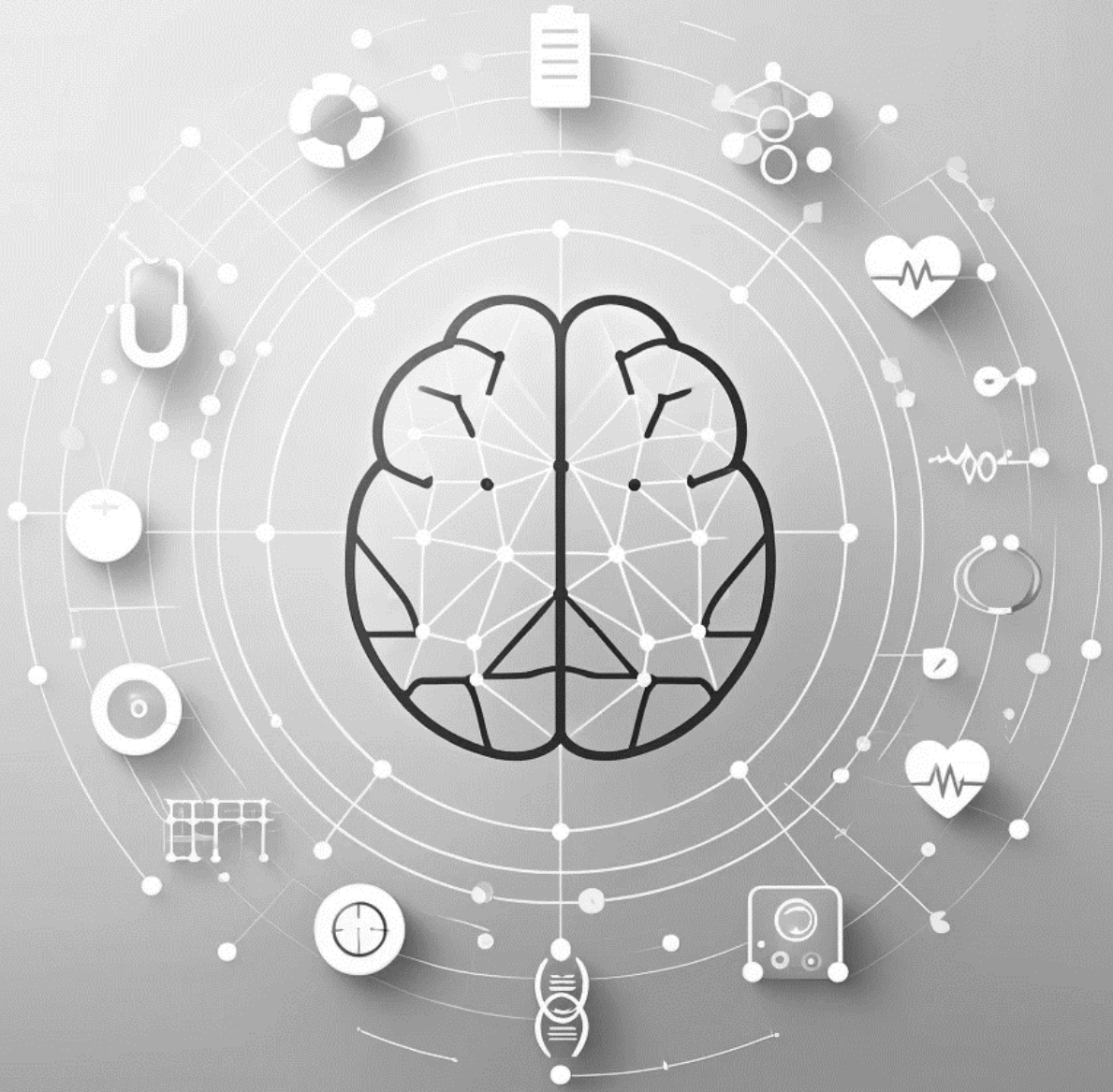
ECCO 2025 Key Industry Supported Sessions Information (2/3)

Date	Sponsor	Title
20 Feb 2025	Abivax	Learn more about obefazimod—an oral, once daily investigational treatment with a novel mechanism of action in phase 3 clinical trials for ulcerative colitis
20 Feb 2025	AlfaSigma	Moderately active UC in the spotlight: Real-world evidence lighting the way: insights into filgotinib
20 Feb 2025	AbbVie	Start on the right path in ulcerative colitis: Spotlight on IL-23 and JAK inhibitors in UC; Case-based approach to illuminate the right path
21 Feb 2025	Eli Lilly	Mirikizumab in UC Clinical Practice: A Long-Term Perspective: Mirikizumab in the UC Treatment Landscape: from Trials to Real-Life
21 Feb 2025	Roche	New Frontiers in IBD: TL1A Inhibition—From Mode of Action to Clinical Application
21 Feb 2025	Eli Lilly	Setting new standards in long-term remission with Mirikizumab in UC: Early and sustained efficacy of Mirikizumab over 3 years

ECCO 2025 Key Industry Supported Sessions Information (3/3)

Date	Sponsor	Title
21 Feb 2025	Takeda	From Mucosal Healing to Disease Clearance: Navigating the Path to Disease Modification in UC
21 Feb 2025	DrFalk	Back to the future: Unleashing the power of established drugs: Avoiding over - and under - treatment: Knowing when to switch
21 Feb 2025	Celltrion	Early Intervention in IBD: Unlocking the Potential of Timely Advanced Treatment
21 Feb 2025	JnJ	Expanding the universe in IBD: Going beyond in Ulcerative Colitis: A new horizon: evolving treatment strategies for ulcerative colitis
21 Feb 2025	MSD	We Can Do Better: Striving Toward Optimal Care of the Patient with Inflammatory Bowel Disease

Noteworthy AI / ML presentations at ECCO 2025



Themes from key AI / ML presentations at ECCO 2025 (1/3)

- **ECCO 2025 will highlight how AI and machine learning are transforming IBD diagnosis, treatment response prediction, and disease monitoring, offering greater precision, automation, and standardization across endoscopy, histology, imaging, and clinical decision-making, ultimately paving the way for personalized medicine and improved patient outcomes**
- Check out the key AI / ML themes at ECCO 2025 below:

- **AI in Endoscopic Evaluation and Standardization**
  - Machine learning (ML) models significantly enhance endoscopic assessment in UC trials, reducing inter-reader variability. AI-based models demonstrated high agreement (QWK=0.77) with traditional 2+1 central reading paradigms. Clip-level ML assessments uncovered patchy inflammation distribution, improving disease evaluation precision. Additionally, AI-driven frame selection reduced non-informative frames by 80.02%, saving 83 hours of review time and increasing endoscopic scoring accuracy by 1.1%
- **AI in Histological Analysis**
  - AI-based histological models achieved AUROC = 0.95 and accuracy = 92% in predicting Nancy grades in UC. AI models reclassified 22 of 76 inactive cases as active disease, demonstrating their potential for improving histological assessment accuracy. A systematic review of AI in histological remission found AI models performed comparably to pathologists, with sensitivity (85%), specificity (88%), and observed agreement (86%)

Themes from key AI / ML presentations at ECCO 2025 (2/3)

- **AI in IBD Imaging**
  - ML models analyzed 9,658 radiology reports to classify inflammation and stenosis with AUC = 0.914 (inflammation) and AUC = 0.955 (stenosis). NLP-based approaches allowed automated large-scale disease monitoring, improving IBD phenotype classification. AI-supported limited rectosigmoid endoscopy showed substantial agreement (kappa = 0.944) with full colonoscopy, offering a potential efficiency-improving strategy for UC trials
- **AI in Precision Medicine and Treatment Response Prediction**
  - AI models predicted anti-TNF therapy response using body composition features (SF: AUC=0.700, VF: AUC=0.745, SM: AUC=0.785). Patients with high muscle mass and protein levels had better responses, while nutritionally at-risk patients showed earlier loss of response (p=0.041). Additionally, an ML-based severe UC prediction model outperformed the Oxford model (AUC=0.897 vs. 0.661, p<0.012), demonstrating high accuracy in identifying high-risk patients

Themes from key AI / ML presentations at ECCO 2025 (3/3)

- **AI in Disease Prediction and Epidemiology**
  - ML models using routine blood tests predicted Crohn's disease (CD) up to 10 years pre-diagnosis, with AUC = 0.70 (adults) and 0.68 (children). Google Trends analysis indicated a growing awareness of IBD in Africa, with search interest expanding to 39 countries for Crohn's disease and 32 for UC. AI-driven data analysis from IBD registries (sensitivity 98.1%, specificity 97.1%) facilitated automated patient identification, enabling real-time clinical data retrieval
- **AI in Surgery and Complications**
  - AI-based Random Forest (RF) models accurately predicted colectomy risk in UC-PSC patients (88.2% accuracy), identifying UC duration >11 years (OR=2.15, p=0.04) and hepatic complications as risk factors. AI-driven NLP models analyzed complex perianal fistulas (CPF) in Crohn's disease (CD), showing higher hospitalization (64%) and surgery rates (36%) compared to overall CD patients
- **AI in IBD Subtyping and Molecular Classification**
  - Unsupervised ML clustering of 2,490 RNA-seq biopsies identified three molecular subtypes for both UC and CD, linked to disease severity and treatment response. Subtypes showed distinct gene expression profiles, providing insights into IBD pathogenesis and supporting personalized therapeutic approaches

Noteworthy AI / ML presentations at ECCO 2025 (Detailed Summaries)

Notable Presentations at ECCO 2025
AI / ML (1/12)

Date	Title	Author	Summary
19 Feb 2025	Measurement of collagen concentration throughout the intestinal layers using Deep Learning: implications in Inflammatory Bowel Disease (IBD)	Efthymios Tsounis	• **Introduction**: This study investigates the role of collagen deposition in IBD, particularly CD, where chronic inflammation leads to fibrosis. By quantifying collagen across intestinal layers, the study aims to determine its association with disease activity and clinical outcomes • **Methodology**: A cohort of 190 IBD patients (98 UC, 92 CD) and 73 controls was analyzed using 612 Sirius Red-stained biopsies. A mask R-CNN model (ResNet-101) trained on annotated images identified intestinal layers, and K-means clustering quantified collagen proportionate area (CPA). Multivariate Cox regression evaluated CPA's prognostic value in IBD progression • **Results:** Submucosal CPA correlated with mucosal ($r=0.36$, $p<0.001$) and muscular layer CPA ($r=0.54$, $p<0.001$). Higher CPA in CD patients was associated with increased disease activity (CDAI: $r=0.31$, SES-CD: $r=0.32$). Patients requiring biologics had higher baseline CPA, and biologic therapy significantly reduced CPA (-21.1 vs. -1.7, $p=0.039$). Baseline CPA independently predicted surgery risk in CD (aHR=1.03, $p=0.048$) • **Conclusions:** Submucosal collagen is a potential prognostic marker in CD, correlating with disease severity and treatment response. Emerging therapies targeting fibrosis could improve long-term patient outcomes
21 Feb 2025	Machine learning assessment of endoscopic severity in Ulcerative Colitis trials: Model evaluation against the 2+1 reference standard	Klaus Gottlieb	• **Introduction**: Regulatory guidance supports the endoscopy subscore, part of the modified Mayo Score, as a primary endpoint in UC trials. However, variability in central reading (2+1 method) reduces reproducibility. Machine learning (ML) offers a potential solution for standardization, improving reliability in clinical trials • **Methodology**: A deep learning algorithm was developed using 18,169 UC endoscopic videos, including 639 randomly selected Phase 3 trial videos with centrally read scores. Quadratic weighted kappa (QWK) was used to compare ML predictions with the 2+1 reference standard, assessing agreement and accuracy in classifying disease severity • **Results:** ML-based scoring demonstrated strong agreement with the 2+1 reference (QWK=0.77, 95% CI: 0.74-0.80). Binary classification accuracy for inactive-to-mild vs. moderate-to-severe UC was 89.8%, and for inactive vs. mild-to-severe disease, 94.2%. Disagreement by two classes was lower (1.9%) than human readers (2.5%) • **Conclusions:** This ML model successfully standardizes endoscopic assessment in UC trials, reducing inter-reader variability. Future studies will refine ML-based reading paradigms to enhance the reliability of endoscopic endpoints in therapeutic trials

Notable Presentations at ECCO 2025
AI / ML (2/12)

Date	Title	Author	Summary
21 Feb 2025	Artificial Intelligence-Based Prediction of Nancy Grade Activity Using Digital Pathology in Ulcerative Colitis Patients	Ji Eun Kim	• **Introduction**: Histologic remission in UC is crucial for long-term outcomes, but the Nancy Histological Index relies on subjective assessment. This study develops an AI model to predict Nancy grades from whole-slide images, enhancing objectivity and efficiency • **Methodology**: A two-stage AI model analyzed 174 digital pathology slides. Stage 1 used U-Net segmentation to classify inflammatory cells. Stage 2 predicted Nancy grades using logistic regression (LR), random forest (RF), and extreme gradient boosting (XGB) • **Results:** The best model (LR + eosinophils) achieved AUROC = 0.95, accuracy = 0.92, sensitivity = 0.88. It reclassified 22 of 76 inactive cases as active disease • **Conclusions:** This AI-based model offers a highly accurate, objective histologic assessment in UC, improving detection and standardization in clinical settings
21 Feb 2025	A 15-year analysis of Inflammatory Bowel Disease in Africa using Google Trends	H. Moran	• **Introduction**: IBD epidemiology in Africa remains poorly understood due to limited health data. Observational studies suggest rising incidence, but alternative methods are needed. Google Trends, with its dominant market share in Africa, provides a potential tool to track public interest and disease awareness over time • **Methodology**: Google Trends data (2009–2023) for "Inflammatory Bowel Disease," "Crohn's Disease," and "Ulcerative Colitis" were analyzed across all African countries with available data. Top and rising search topics were identified, particularly those related to symptoms and diagnosis • **Results:** Search interest in IBD increased in all countries with available data. In 2023, searches for IBD, Crohn's disease, and ulcerative colitis had expanded to 29, 39, and 32 countries, respectively, up from just a few in 2009. Symptom and diagnosis-related queries accounted for 75% of top searches. Central African countries had the lowest search activity, reflecting regional disparities in awareness or internet access • **Conclusions:** Google Trends data indicate growing awareness of IBD in Africa, potentially reflecting an increase in disease incidence. This method may serve as a novel epidemiological tool in regions lacking robust health data, supporting future disease monitoring and awareness strategies

Notable Presentations at ECCO 2025
AI / ML (3/12)

Date	Title	Author	Summary
21 Feb 2025	Evaluation of anorectal function and structure in patients with perianal Crohn's disease with a novel 3-D high-definition anorectal manometry technology	E. Lastiri	• **Introduction**: Perianal fistulizing Crohn's disease (PFCD) affects sphincter integrity, leading to fecal incontinence (FI) and rectal pain. High-definition 3D anorectal manometry (HD-ARM) is a novel tool for assessing sphincter function and pressure defects, but its use in IBD patients remains unexplored • **Methodology**: A prospective cohort study analyzed HD-ARM and MRI findings in CD patients with/without PFCD. Clinical correlations included disease activity (Harvey-Bradshaw Index), FI severity, QoL, and MRI abnormalities • **Results:** Among 19 CD patients, 68.4% had PFCD and 90% had MRI-confirmed pressure defects. Common abnormalities included rectal hypersensitivity (36.8%), hyposensitivity (31.6%), sphincter insufficiency (21.1%), and dyssynergia defecation (15.8%) • **Conclusions:** Anorectal dysfunction is prevalent in CD, independent of perianal disease. HD-ARM correlates with MRI findings, improving FI and sphincter dysfunction assessment in IBD management
21 Feb 2025	Using a machine learning model to grade clip-level endoscopic inflammation reveals the heterogeneity of mucosal inflammation in ulcerative colitis	D.T. Rubin	• **Introduction**: Endoscopic assessment in UC trials is limited by observer variability and inability to detect inflammation heterogeneity. This study applies a machine learning (ML) model to assess clip-level endoscopic inflammation, improving precision • **Methodology**: An ML model predicting endoscopy subscore analyzed 49 colonoscopy videos from a Phase 3 mirikizumab trial. Videos were divided into 15-, 30-, and 60-second clips, and clip- and video-level scores were compared • **Results:** Inflammation showed a patchy distribution, independent of video-level severity. Variability was highest in 15-second clips, revealing undetected heterogeneity within standard video-level assessments • **Conclusions:** Clip-level ML scoring improves the detection of mucosal inflammation patterns, addressing observer variability. 15-second clips provide optimal precision, warranting further study in UC trial assessments

Notable Presentations at ECCO 2025
AI / ML (4/12)

Date	Title	Author	Summary
21 Feb 2025	Application of 5 different machine-learning approaches to develop an artificial intelligence pathway to predict IBD-associated fatigue: Analysis of 1200 data points in 531 IBD patients.	C.S. Chuah	• **Introduction**: Fatigue significantly impacts IBD patients' well-being, persisting in 50% of cases despite advanced therapies. The underlying mechanisms beyond gut inflammation remain unknown. This study applies ML models to identify predictors of IBD-associated fatigue • **Methodology**: A multi-center UK cohort (2020–2024) of 531 IBD patients was analyzed using five ML models (gradient boosting, random forests, logistic regression, support vector machines, deep neural networks). 100 clinical variables (CUCQ32 scores, seasonality, BMI, treatments, biomarkers) were integrated to train, validate, and test fatigue prediction models • **Results:** ML performed comparably to traditional statistics (Random Forest AUC=0.75, Logistic Regression AUC=0.74). Key predictors varied by model—XGBoost prioritized symptoms, weight, and platelets, while logistic regression highlighted seasonality (autumn, winter). ML predictions in biochemically controlled patients (CRP<5, calprotectin<250) were poor (AUC 0.61–0.66), suggesting unmeasured pathobiological contributors • **Conclusions:** ML models show promise in IBD-fatigue prediction but remain suboptimal, indicating hidden biological drivers. Future AI models integrating deep molecular data may enhance fatigue assessment and treatment strategies
21 Feb 2025	Application of a machine learning model in the 2+1 central reading paradigm to assess endoscopic severity in ulcerative colitis trials	K. Gottlieb	• **Introduction**: The 2+1 human central reader paradigm is the standard for evaluating the endoscopy subscore in UC clinical trials, but inter-reader variability remains a challenge. Machine learning (ML) models offer the potential for standardizing assessments. This study explores ML integration into the 2+1 paradigm to improve reliability • **Methodology**: A deep learning model was trained on full-length UC endoscopy videos from the mirikizumab Ph 3 LUCENT1 trial (n=639). Quadratic weighted kappa (QWK) assessed agreement between the ML model, local reader (LR), and first central reader (CR1) vs. final 2+1 reference • **Results:** ML-model agreement with the final 2+1 reference (QWK = 0.77, 95% CI: 0.74–0.80) was comparable to human LR vs. CR1 agreement (QWK = 0.71, 95% CI: 0.67–0.75, 62.4% agreement). ML vs LR (QWK = 0.69) and ML vs CR1 (QWK = 0.72) showed similar agreement rates (59.5% and 66.5%, respectively) • **Conclusions:** The ML model effectively integrates into the 2+1 paradigm, automating one of the initial human assessments. However, high human discordance limits ML validation. Future studies will explore alternative ground truth definitions to refine endoscopic endpoint assessments

Notable Presentations at ECCO 2025
AI / ML (5/12)

Date	Title	Author	Summary
21 Feb 2025	Machine learning for predicting Crohn's disease from routine blood tests years before diagnosis: results from the epi-IIRN	R. Lev Zion	• **Introduction**: Early detection of IBD remains challenging, as biomarkers are rarely tested before diagnosis. This study examines routine blood tests as potential early predictors of Crohn's disease (CD) using machine learning (ML) in a nationwide Israeli cohort • **Methodology**: Data from the epi-IIRN cohort (2005–2020) included 8,630 CD patients, 6,791 UC patients, and matched controls. Blood tests up to 15 years pre-diagnosis were analyzed using Welch's t-test and ML models, selecting the 15 most significant tests for CD prediction • **Results:** Among adults with CD, 29 blood tests differed from controls ≥1 year pre-diagnosis, with WBC, neutrophils, and platelets showing consistent differences >10 years pre-diagnosis. In children, 17 blood tests showed early differences. No significant markers were found for UC. ML models predicted CD with an AUC of 0.70 (adults) and 0.68 (children) one year before diagnosis • **Conclusions:** Routine blood tests reveal early CD signals, offering a potential screening and prevention tool. ML-based prediction models could support earlier detection and intervention strategies in at-risk populations
21 Feb 2025	Artificial intelligence methods for informative frame detection reduce central reading time and improve disease grading in Ulcerative Colitis clinical trials	A. Juhasz	• **Introduction**: Endoscopic scoring is crucial in UC clinical trials but is time-consuming and prone to inter-reader variability. AI-driven frame selection can enhance MES (Mayo Endoscopic Subscore) grading by filtering non-informative frames, reducing review time and improving scoring accuracy • **Methodology**: A neural network-based AI system trained on 104,572 endoscopic frames identified blurriness, out-of-body views, camera movement, and obstructions. It was tested on 1,564 UC patients (357 hours of videos) from a multicenter dataset. Videos were expert-annotated for MES grading, and Quadratic Weighted Kappa (QWK) measured AI-human agreement • **Results:** AI detected non-informative frames with 80.02% accuracy, reducing video length by 3:09 minutes per video (total time saved: 83 hours). MES grading accuracy improved by 1.1%, with QWK=0.690 (all videos) and QWK=0.725 (concordant readings), showing high agreement with gastroenterologists • **Conclusions:** The AI system optimizes endoscopic video analysis, reduces manual scoring time, and enhances MES grading accuracy, offering a valuable tool for UC trials to streamline assessments while maintaining reliability

Notable Presentations at ECCO 2025
AI / ML (6/12)

Date	Title	Author	Summary
21 Feb 2025	Endo-Histo Foundational Fusion Model: A Novel Artificial Intelligence Approach for Predicting Histologic Remission and Early Response to Therapy in a Phase 2 Ulcerative Colitis Clinical Trial	M. Iacucci	• **Introduction**: AI-driven endoscopy and histology offer accurate, objective disease activity assessment in UC. Integrating multi-source AI models could enhance standardized disease evaluation and therapy response prediction. This study develops a novel fusion AI model combining endoscopic and histologic data for remission assessment in UC clinical trials • **Methodology**: The AI fusion model was trained on paired endoscopic videos (n=291) and histological whole-slide images (n=291) from the Phase 2 Mirikizumab trial (NCT02589665). Feature extraction was performed using BioMedCLIP (endoscopy) and CONCH (histology), with multi-head self-attention for fusion. Histological remission (Geboes ≤2B.0) and therapy response (Geboes <3.1) were assessed at weeks 12 and 52 • **Results:** The fusion model outperformed single-modality assessments, achieving 89.72% sensitivity, 89.67% specificity, and 89.69% accuracy for histological remission. It demonstrated high predictive performance at week 52 (sensitivity: 97.96%, specificity: 86.84%, accuracy: 93.10%). AI-based assessment showed strong agreement with central readouts • **Conclusions:** This multimodal AI fusion model enhances histological remission assessment and predicts therapy response with high accuracy. It represents a significant step toward AI-driven precision medicine, standardizing central readouts and automating UC disease assessment
21 Feb 2025	Building a Robust Artificial Intelligence Solution for Use in Ulcerative Colitis Clinical Trials	M. Byrne	• **Introduction**: AI-driven assessment of UC disease activity aims to match or exceed expert performance in clinical trials. Certai, an AI model, was developed to align with Modified Mayo Endoscopic Score (MES) criteria, ensuring standardized and reproducible scoring • **Methodology**: Certai was pre-trained using DINOv2 on 845 colonoscopic procedures and refined with Software for Intelligent Annotation (SIA). Eight IBD specialists and seven trainees labeled 8.9 million frames, meeting minimum ICC and QWK thresholds. The Vision Transformer-based model includes QC & Scoring components to filter poor-quality frames and assess UC severity • **Results:** Certai achieved 100% agreement with human central readers on modified MES validation. ICC improved from 0.922 to 0.955 when Certai was paired with an expert labeller. Quadratic Weighted Kappa (QWK) increased from 0.914 to 0.961 with AI integration • **Conclusions:** Certai enhances MES scoring accuracy and efficiency, reducing reader variability. Future applications include AI-assisted stand-alone reads or integration in a 2+1 central reader model, improving clinical trial consistency and speed

Notable Presentations at ECCO 2025
AI / ML (7/12)

Date	Title	Author	Summary
21 Feb 2025	Using a machine learning model to assess agreement between inflammation in the rectosigmoid and entire colon in patients with ulcerative colitis	D.T. Rubin	• **Introduction**: Limited rectosigmoid endoscopy is sometimes used in UC trials, but full colonoscopy is preferred due to inter- and intra-rater variability. This study evaluates a machine learning (ML) model to determine whether distal colon inflammation reflects full-colon inflammation • **Methodology**: An ML model trained on endoscopic subscores was applied to 49 full-length UC endoscopy videos from the mirikizumab Phase 3 trial (NCT03518086). Videos were divided into 15-, 30-, and 60-second clips, and clip-level scores from the final two clips (sigmoid and rectum) were compared to video-level subscores using kappa statistics • **Results:** The ML model demonstrated substantial agreement between video-level and distal colon endoscopy subscores. 60-second clips had the highest agreement (kappa=0.944). Agreement rate between clip 1 and video-level score: 0.67; clip 2: 0.76; both clips combined: 0.86 • **Conclusions:** This ML-based approach supports distal colon assessment as a proxy for full-colon inflammation, improving UC trial efficiency. Prospective studies are needed to validate ML-driven limited endoscopy strategies for disease activity assessment
21 Feb 2025	Artificial intelligence-enabled histology is comparable in performance to pathologists in assessing histological remission in inflammatory bowel disease: a systematic review, meta-analysis and meta-regression	M.A. Puga Tejada	• **Introduction**: Histological remission is a key treatment target in IBD, but assessment is limited by variability and lack of standardization. AI models offer a promising solution for improving accuracy and reproducibility. This study systematically reviews and analyzes AI performance compared to pathologists • **Methodology**: A systematic review and meta-analysis was conducted using Medline/PubMed and Scopus (until September 2024), identifying 14 eligible studies from 432. AI sensitivity, specificity, PPV, NPV, and agreement rates were pooled and compared with pathologists' assessments. Meta-regression explored factors influencing AI performance • **Results:** AI demonstrated high accuracy in histological remission assessment (sensitivity = 0.85, specificity = 0.88, PPV = 0.88, NPV = 0.83, F1 score = 0.85). AI performed comparably to pathologists, but had lower sensitivity (OR 0.50, p=0.01). Adult-based AI models showed better performance and lower heterogeneity • **Conclusions:** AI models effectively assess histological remission, matching pathologists in specificity and agreement. Future large-scale, standardized studies are needed to reduce heterogeneity and advance AI integration into clinical practice for IBD monitoring

Notable Presentations at ECCO 2025
AI / ML (8/12)

Date	Title	Author	Summary
21 Feb 2025	Predict the risk of acute severe ulcerative colitis based on machine learning algorithm: A multicenter cohort study	Y. Qiu	• **Introduction**: Severe ulcerative colitis (UC) increases the risk of hospitalization and colectomy, yet predictive models are limited, especially in Asian populations. This study develops and validates a machine learning (ML) model to predict severe UC in Chinese patients, comparing it to the Oxford model • **Methodology**: A retrospective cohort (2013–2016) from four tertiary Chinese hospitals included 437 mild-to-moderate UC patients. The ML model (multilayer perceptron, MLP) was trained using 11 clinical features (age, gender, disease extent, CRP, ESR, hemoglobin, WBC, platelet, ALB, and treatment history). Model performance was compared against Oxford's model and Cox regression • **Results:** 15.3% of patients (n=67) progressed to severe UC requiring hospitalization or surgery within 3 years. The MLP model outperformed Oxford's model (AUC=0.897 vs. 0.661, p<0.012) and Cox regression (AUC=0.764, p<0.001), demonstrating high accuracy in both internal (AUC=0.883) and external (AUC=0.897) validation • **Conclusions:** The MLP predictive model demonstrated excellent discrimination for severe UC, surpassing traditional models. This validated tool could aid in early risk stratification and personalized treatment strategies for Chinese UC patients
21 Feb 2025	Machine Learning-Based Interpretation of Unstructured Radiology Reports for Objective Scoring of Inflammation and Stenosis in IBD: A Nationwide Study From the epi-IIRN	M. Freiman	• **Introduction**: IBD imaging (CT/MR enterography) lacks standardization due to unstructured radiology reports. This study uses machine learning (ML) and NLP to extract and quantify inflammation and stenosis severity for large-scale phenotyping • **Methodology**: Using the epi-IIRN cohort (9658 reports, 7389 patients), HSMP-BERT NLP extracted radiological features. An ML model predicted categorical (no, mild, moderate/severe) and VAS (0–100) scores, validated with physician-based scoring via 5-fold cross-validation • **Results:** For inflammation, ML achieved AUC=0.914, accuracy=0.786, kappa=0.676. For stenosis, AUC=0.955, accuracy=0.912, kappa=0.793, showing high predictive reliability. VAS predictions correlated well with physician ratings • **Conclusions:** ML-based NLP enables automated IBD imaging analysis, improving large-scale disease monitoring and classification. This method could support clinical decision-making and research applications

Notable Presentations at ECCO 2025
AI / ML (9/12)

Date	Title	Author	Summary
21 Feb 2025	A novel switching of artificial intelligence to generate simultaneously multimodal images to assess inflammation and predict outcomes in Ulcerative Colitis	M. Iacucci	• **Introduction**: Virtual Chromoendoscopy (VCE) enhances UC inflammation assessment, but observer variability limits reliability. This study develops an AI model to detect, generate, and transition between endoscopic modalities, improving standardization and prediction • **Methodology**: Using endoscopic videos (HD-WLE, iScan2/3, NBI) from the PICaSSO cohort (302 iScan, 54 NBI patients), a neural network (NN) classified frames and enabled inter-modality switching. A deep-learning model trained on 2535 frames was tested on 123 videos for inflammation and outcome prediction • **Results:** The model classified endoscopic modalities with 92% accuracy and outperformed unimodal assessment in predicting endoscopic/histologic remission (AUROC 0.96 for UCEIS, 0.90 for PICaSSO). It predicted clinical outcomes with HR 3.18 (endoscopy) and 5.75 (histology) in the iScan cohort • **Conclusions:** This multimodal AI model enhances UC assessment and outcome prediction, offering a standardized, automated tool for more precise inflammation evaluation in clinical practice and trials
21 Feb 2025	Predictive Modeling for Colectomy Risk in Patients with Ulcerative Colitis and Primary Sclerosing Cholangitis: A Brazilian Multicentric Study Utilizing Machine Learning.	B.C. da Silva	• **Introduction**: UC and PSC are interrelated diseases with an elevated colectomy risk, primarily due to dysplasia and colorectal cancer. This study develops a predictive model to identify high-risk patients, enabling personalized management • **Methodology**: A cross-sectional study (83 UC-PSC patients) from multiple Brazilian centers used logistic regression and Random Forest (RF) models for colectomy risk prediction. Data were analyzed using R Studio, incorporating clinical, endoscopic, and hepatic factors • **Results:** 13 patients (15.7%) required colectomy. UC duration >11 years increased risk (OR=2.15, p=0.04), while hepatic complications showed a trend (OR=1.79, p=0.059). The RF model (88.2% accuracy) outperformed linear regression, identifying hepatic complications, prolonged UC, and biologic therapy use as key predictors • **Conclusions:** The RF model provides superior colectomy risk prediction, supporting early intervention in UC-PSC patients. This machine learning tool enhances clinical decision-making, facilitating tailored management to prevent severe outcomes

Notable Presentations at ECCO 2025
AI / ML (10/12)

Date	Title	Author	Summary
21 Feb 2025	ViT-based deep learning and unsupervised clustering analysis in Crohn's Disease based on body composition to identify distinct phenogroups and predict the effectiveness of anti-TNF therapy	Y. Li	• **Introduction**: Anti-TNF therapy is key in Crohn's disease (CD) but has a 30% primary nonresponse rate and 5% secondary loss per year. This study develops an AI model using body composition to predict anti-TNF effectiveness • **Methodology**: A Shanghai cohort (n=105, 2020–2023) was analyzed using K-means clustering to classify body composition phenogroups. Radiomics features from subcutaneous fat (SF), visceral fat (VF), and skeletal muscle (SM) at L3/L4 (CTE) were extracted, and a Vision Transformer (ViT) deep-learning model was trained • **Results:** Three phenogroups were identified. Cluster 1 (high muscle mass and protein levels) had the best response (p=0.023). Cluster 3 (low BMI, high nutritional risk) showed earlier loss of response (p=0.041). The AI model predicted anti-TNF response (SF: AUC=0.700, VF: AUC=0.745, SM: AUC=0.785) • **Conclusions:** Nutritional status impacts anti-TNF response in CD. Body composition analysis and AI-based prediction models could guide nutritional support and personalized treatment strategies for improving therapy outcomes
21 Feb 2025	Machine Learning and Mendelian Randomization Analysis for Predicting Endoscopic Restenosis in Patients with Crohn's Disease after Endoscopic Balloon Dilation	T. Su	• **Introduction**: Endoscopic balloon dilation (EBD) is effective for treating Crohn's disease (CD)-related stenosis, but restenosis is common. This study develops an ML-based prognostic model to predict endoscopic restenosis risk and explores biomarkers using Mendelian randomization (MR) • **Methodology**: A retrospective cohort (n=135, 2013–2024) was analyzed using seven ML models. Cox and logistic regression identified key risk factors. SHapley Additive exPlanations (SHAP) ranked feature importance. Two-sample MR analysis explored 50 biomarkers for intestinal stricture • **Results:** 53% of patients developed restenosis (mean time: 183 days). Glucocorticoid use, stenosis position, technical success, and albumin level predicted restenosis risk. CoxPH and LASSO models had the best performance (C-index >0.7). MR analysis found no mediating effect between CD and stricture risk • **Conclusions:** ML-based models effectively predict EBD restenosis risk, aiding treatment decisions. However, MR analysis failed to identify stenosis-related biomarkers, highlighting the need for further research

Notable Presentations at ECCO 2025
AI / ML (11/12)

Date	Title	Author	Summary
21 Feb 2025	A Novel Inflammatory Bowel Disease Registry Powered by Artificial Intelligence and Natural Language Processing	J. Liu	• **Introduction**: IBD registries enhance clinical insights but are limited by manual data entry. Machine learning (ML) and natural language processing (NLP) can automate data collection, improving efficiency and accessibility. This study validates the IBD Data Lake, an AI-powered data repository • **Methodology**: Electronic medical records from the IBD Centre of British Columbia were transferred to a secure cloud-based database. Comprehend MedicalTM NLP extracted structured and unstructured data, validated by manual chart review. A custom interface enabled real-time data retrieval • **Results:** Among 208 patients (104 IBD, 104 non-IBD), the IBD Data Lake accurately identified IBD cases (sensitivity 98.1%, specificity 97.1%). NLP accuracy was 100% for disease classification, 96.9% for smoking status, and 92% for extraintestinal manifestations • **Conclusions:** IBD Data Lake demonstrates high accuracy in automated clinical data extraction, enabling faster cohort identification and research recruitment. This AI-driven system has the potential to transform IBD research and innovation
21 Feb 2025	Identification and characterization of patients with Crohn's disease and complex perianal fistulas using Natural Language Processing and machine learning: INTUITION-CPF Study.	M. Chaparro	• **Introduction**: Complex perianal fistulas (CPF) affect 26-35% of Crohn's disease (CD) patients, with no gold-standard treatment. This study uses AI-driven Natural Language Processing (NLP) to analyze electronic medical records (EMRs) and characterize CD+CPF patients in Spain • **Methodology**: The INTUITION-CPF study is a retrospective, multicenter analysis (2015–2021). AI-NLP identified CD+CPF cases, validated sensitivity/specificity, and analyzed patient characteristics, treatments, and healthcare utilization • **Results:** Among 2,182 CD patients, 263 (12%) had CPF, with 70% experiencing pain and 48% active disease. CD+CPF patients had higher biologic use (41% vs. 21%) and surgery rates (36% vs. 13%). Hospitalization (64% vs. 49%) and emergency visits (27%) were more frequent in CD+CPF • **Conclusions:** CD+CPF patients require intensive, multidisciplinary management, with higher biologic use, surgery rates, and hospitalizations. AI-NLP improves patient identification, but further refinement is needed for enhanced accuracy in IBD data analysis

Notable Presentations at ECCO 2025
AI / ML (12/12)

Date	Title	Author	Summary
21 Feb 2025	Prediction of extraintestinal manifestations in inflammatory bowel disease using clinical and genetic variables with machine learning.	T. Pérez	• **Introduction**: Extraintestinal manifestations (EIMs) impact IBD morbidity, yet their clinical and genetic predictors remain unclear. This study analyzes clinical-genetic risk factors and develops machine learning (ML) models to predict EIM occurrence • **Methodology**: A cohort of 414 IBD patients (2019–2024) was analyzed using statistical and ML models (logistic regression, Random Forest). 227 genotyped patients were screened for EIM-associated variants, and a polygenic risk score (PRS) was evaluated • **Results:** 29% of patients had EIMs (69% UC, 31% CD). Significant risk factors included family history (OR=3.86, p=0.002), anti-TNF use (OR=5.18, p=0.0009), and age (OR=1.03, p=0.01). Variants rs9936833-CC (LINC917/FENDR) and rs44107871 (PVT1) increased EIM risk (p<0.05). PRS was not predictive (AUC=0.67), but ML models improved accuracy • **Conclusions:** EIMs affect one-third of IBD patients, with genetic and clinical risk factors identified. ML-based models outperform PRS, enhancing EIM prediction for personalized management
21 Feb 2025	Unlocking Inflammatory Bowel Disease subtypes: a deep dive into transcriptomics and Machine Learning	Animesh Acharjee	• **Introduction**: Molecular IBD subtypes are crucial for understanding gene expression variability, clinical heterogeneity, and treatment responses. This study applies unsupervised machine learning (K-means clustering) to RNA-seq data to define IBD transcriptomic subtypes • **Methodology**: RNA sequencing was performed on 2,490 inflamed and non-inflamed biopsies from adult IBD patients. K-means clustering determined three subtypes each for UC and CD, with gene enrichment and statistical analyses linking clusters to disease severity and location • **Results:** UC clusters focused on RNA processing (EXOSC genes), autophagy (ATG13, VPS37C), and cytoskeletal stability (SRF, SRC, ABL1). CD clusters involved cytoskeletal dynamics (CFL1, F11R), protein synthesis (MTREX, SART3), and cytoskeletal organization (TESK1, DVL2). COX1 was upregulated across all clusters • **Conclusions:** This study defines three transcriptomic subtypes for UC and CD, revealing distinct molecular pathways. These insights support personalized therapeutic approaches, improving IBD disease stratification and treatment outcomes

Strategic Insights and Strategy Development is our focus