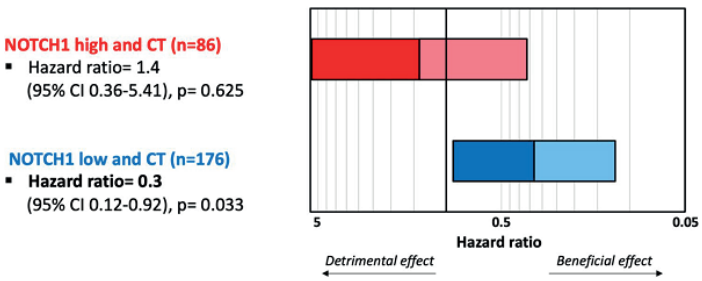
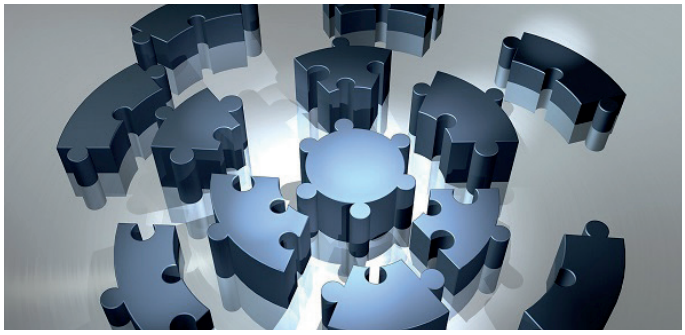
e:Medium flash NEWSLETTER

April 2025

Dear Reader,
Welcome to the latest edition of our newly formatted monthly newsletter! Stay up to date with the most exciting research findings from the e:Med network. Our goal is to foster collaboration, communication, and knowledge exchange within the community.

Please feel free to draw our attention to your new publications via e:Med website.





NOTCH1: KEY TO CHEMORESISTANCE?
Personalized touch to standard therapy

Personalizing the systemic therapy in patients with early breast cancer (eBC) would minimize the harmful side-effects of chemotherapy. The new study from Prof. Martina Vetter of the e:Med demonstrator HER2Low, led by Prof. Stefan Wiemann, now took a closer look at the predictive and prognostic features of the NOTCH1 gene. By measuring mRNA expression and examining histopathological features of eBC tumors, they found that high NOTCH1 levels could indicate lower sensitivity to chemotherapy. Their results suggest that inhibiting NOTCH1 could make cancer cells more vulnerable to chemotherapy and, hence, increase its efficacy.
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DECODING THE PSYCHIATRIC PUZZLE
Genetic landscape of psychiatry

Why do psychiatric disorders share the same genetic conditions yet manifest differently? Using snRNA-seq and snATAC-seq, scientists of e:Med alliance DiNGS led by Prof. Michael Ziller analyzed 92 post-mortem brains to map genetic and epigenetic profiles at single nucleus level. They found cell-type specific dysregulation especially in the excitatory neurons. Their study underscores the complexity of psychiatric disorders and emphasizes the power of cell-type specific analysis associated with the clinical profile.
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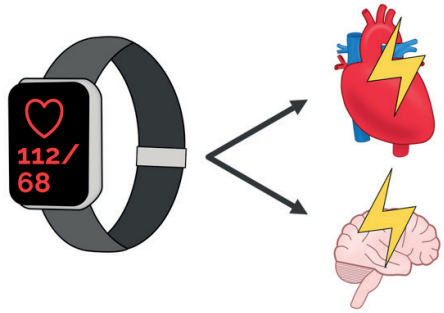

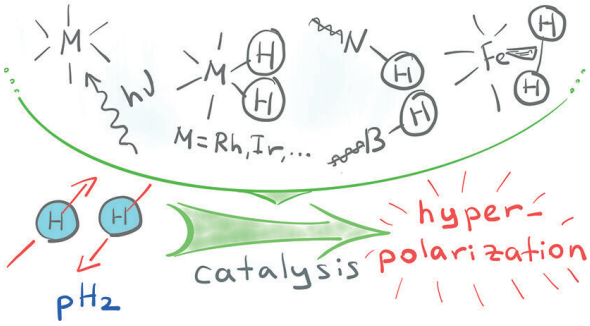

DOUBLE TROUBLE OF THE HEART
Dual screening to rescue atrial fibrillation patients

Hypertension (HT) is a big risk factor for atrial fibrillation (AF). 70% of AF patients manifest HT and are at risk of various other diseases, such as stroke and dementia. Prof. Renate Schnabel of the e:Med alliance symAtrial led by Prof. Tanja Zeller, along with many experts in AF International Collaboration, aims to identify the knowledge gaps in the relationship of AF and HT. Their review now reveals that anti-HT medication can decrease the incidence of AF. It moreover emphasizes the need to simultaneously screen patients for both conditions.

read more

A SPOTLIGHT ON BIOCHEMICAL REACTIONS
Diverse applications of PHIP

What if we could see the invisible metabolic processes noninvasively? Nuclear spin hyperpolarization comes as a viable solution. However, parahydrogen-induced polarization (PHIP) is widely used hyperpolarization method not only in medicine but also in chemistry, catalysis. PHIP's diverse applications are explored in this review from e:Med alliance Try-IBD, led by Prof. Konrad Aden, from photoreactions to enzymatic processes. Dr. Andrey Pravdivtsev of the Try-IBD and colleagues discuss the implications of PHIP for understanding hydrogen activation mechanisms in enzymes and showcase its versatility for mechanistic studies and chemical analysis. read more

IMMUNE BLUEPRINT
Cytokine atlas of inflammation

We all have an immune profile as unique as a fingerprint, but which curves of that print are bad for us? Recent paper from Prof. Uwe Völker of the e:Med alliance Sys_CARE, led by Prof. Jan Baumbach, now undertook the challenge of profiling 47 cytokines, chemokines, and growth factors in 1175 subjects from the population-based SHIP-TREND-0 study. The resulting cytokine atlas revealed significant variation in pro-inflammatory cytokines based on gender, sex, age and BMI. This study provides a reference base and serves as a guide in identifying pathological immune signatures, especially in inflammatory or autoimmune diseases. read more

ONLINE SEMINAR SERIES
Modelling approaches for disease processes

May 7, 2025
Bayesian metamodeling of complex biomolecular processes in living cells
Dr. Barak Raveh, The Hebrew University of Jerusalem, Israel

Location: Zoom, 2 p.m. CEST

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