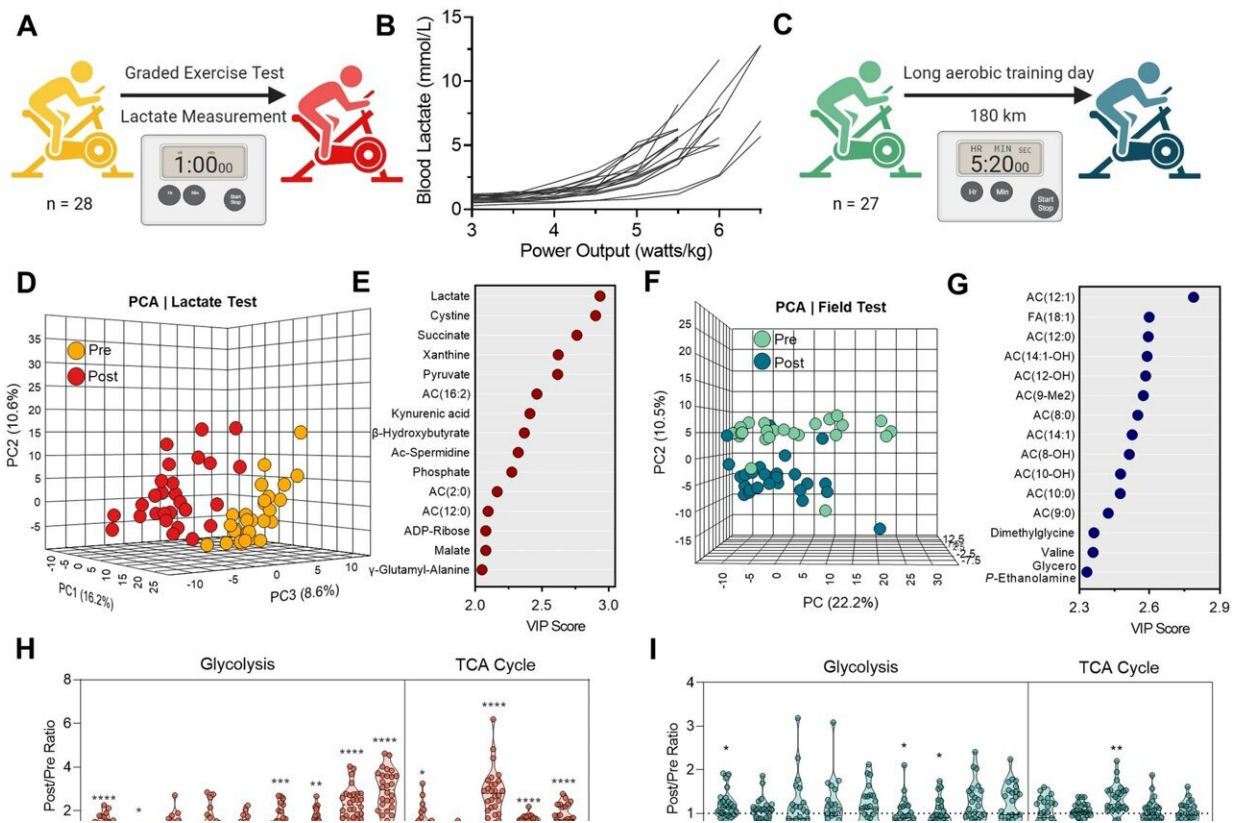# Blood of elite cyclists holds clues to treating and preventing chronic diseases

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Metabolic signatures of short/high-intensity and long/low-intensity training regimens. **A** During the training camp, whole blood from 28 Elite World Tour cyclists was sampled before and after a 1 h graded exercise test on an ergometer. **B** Whole blood lactate measurements (millimolar) as a function of normalized power output $(W \cdot kg^{-1})$ during the test. **C** During the same training camp, whole blood was sampled from 27 of the cyclists before and after a 180 km field test maintained in an aerobic regimen beneath the lactate threshold. Multivariate analyses including a principal component analysis (PCA) and a variable

importance in projection (VIP) of partial least squares-discriminant analysis were performed on metabolomics data generated from the graded exercise test (**D**) and (**E**), or aerobic field test (**F**) and (**G**), respectively. Individual cyclist fold changes (post/pre) for metabolites involved in glycolysis and the tricarboxylic acid (TCA) cycle are shown as violin plots for the (**H**) graded exercise test and (**I**) aerobic field test. Individual cyclist fold changes (post/pre) for free fatty acids are shown as violin plots for the (**J**) graded exercise test and (**K**) aerobic field test. Individual cyclist fold changes (post/pre) for acylcarnitines are shown as violin plots for the (**L**) graded exercise test and (**M**) aerobic field test. *P* values (two-tailed paired *T*-test) for the post/pre-comparison are indicated as *

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