Transcriptomic alterations during ageing reflect the shift from cancer to degenerative diseases in the elderly.

Aramillo Irizar P, Schäuble S, Esser D, Groth M, Frahm C, Priebe S, Baumgart M, Hartmann N, Marthandan S, Menzel U, Müller J, Schmidt S, Ast V, Caliebe A, König R, Krawczak M, Ristow M, Schuster S, Cellerino A, Diekmann S, Englert C, Hemmerich P, Sühnel J, Guthke R, Witte OW, Platzer M, Ruppin E, Kaleta C (2018) Transcriptomic alterations during ageing reflect the shift from cancer to degenerative diseases in the elderly. *Nat Commun* 9(1), 327.

Details



Abstract

Disease epidemiology during ageing shows a transition from cancer to degenerative chronic disorders as dominant contributors to mortality in the old. Nevertheless, it has remained unclear to what extent molecular signatures of ageing reflect this phenomenon. Here we report on the identification of a conserved transcriptomic signature of ageing based on gene expression data from four vertebrate species across four tissues. We find that ageing-associated transcriptomic changes follow trajectories similar to the transcriptional alterations observed in degenerative ageing diseases but are in opposite direction to the transcriptomic alterations observed in cancer. We confirm the existence of a similar antagonism on the genomic level, where a majority of shared risk alleles which increase the risk of cancer decrease the risk of chronic degenerative disorders and vice versa. These results reveal a fundamental trade-off between cancer and degenerative

ageing diseases that sheds light on the pronounced shift in their epidemiology during ageing.

Beteiligte Forschungseinheiten

Microbiome Dynamics Gianni Panagiotou Mehr erfahren

Netzwerkmodellierung

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Themenfelder

Systembiologie von Erkrankungen

Identifier

doi: 10.1038/s41467-017-02395-2

PMID: 29382830