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The genetic link between planet formation and the host star

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environments, which in turn are connected to those of the host stars. The majority of our understanding of this genetic link, however, is still implicitly built on the sole case study of the Solar System and the reconstructed characteristics of the Solar Nebula. Is this a reliable foundation? Both the mass and accretion rate of protoplanetary disks are known to be proportional to the stellar mass. The stellar metallicity determines the maximum dust-to-gas ratio of disks. The balance between the disk accretional heating and the stellar luminosity sets the disk thermal structure and, together with the stellar composition and refractory-to-volatile ratio, controls the local abundance of planet building material. The growth rate of planets is limited by the local availability of dust and gas, which is governed by the disk mass transport processes and by planetary migration, in
turn set by the disk mass. Planets formed around different stars will therefore be born in different disk environments and, due to these star-disk connections, can be the product of diverging growth and migration histories even when they share the same final physical properties. In this talk I will review recent advances in our growing understanding of this multifaceted problem.

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