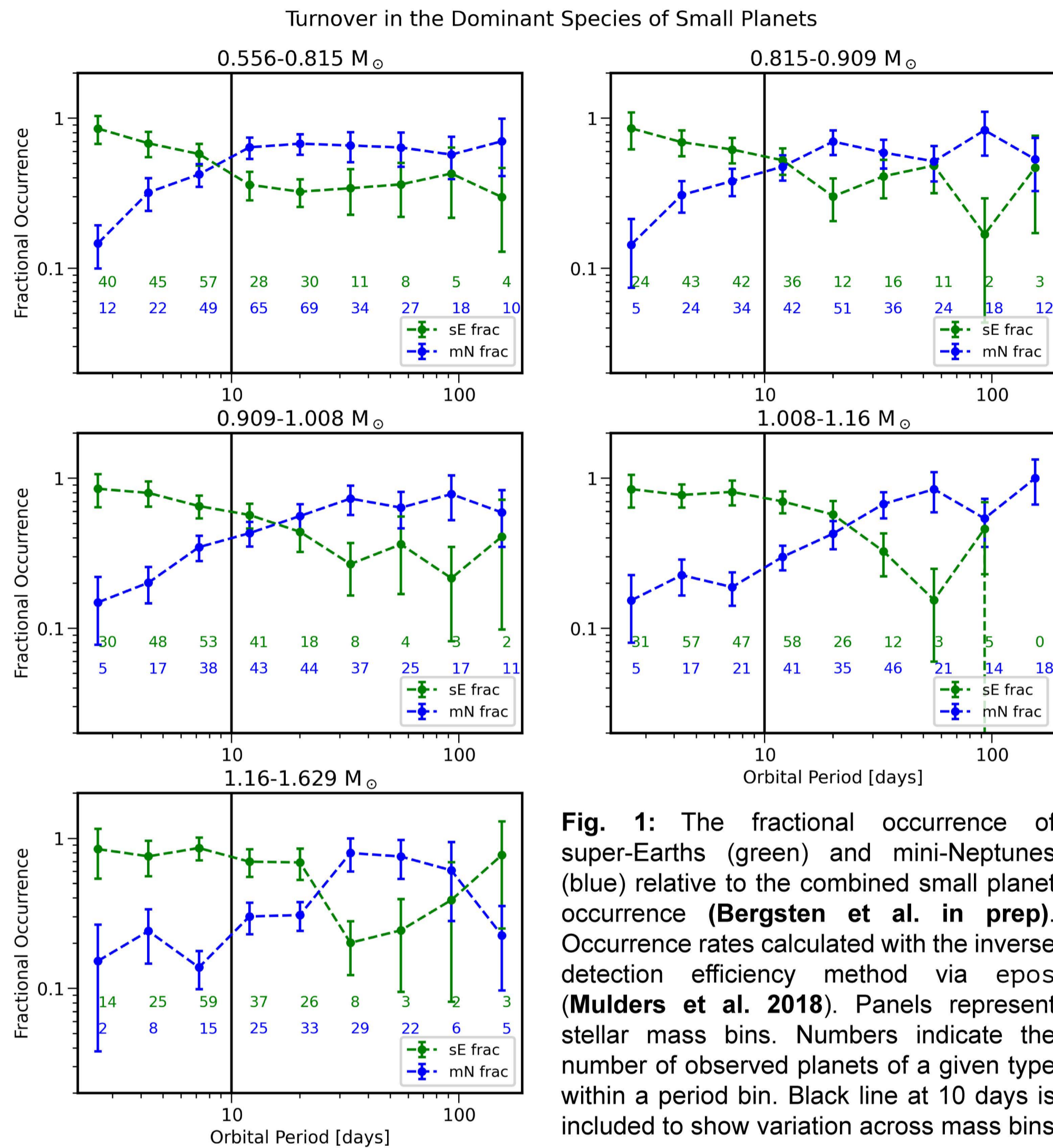


Demographics of Small Kepler Planets and their Dependence on Stellar Mass

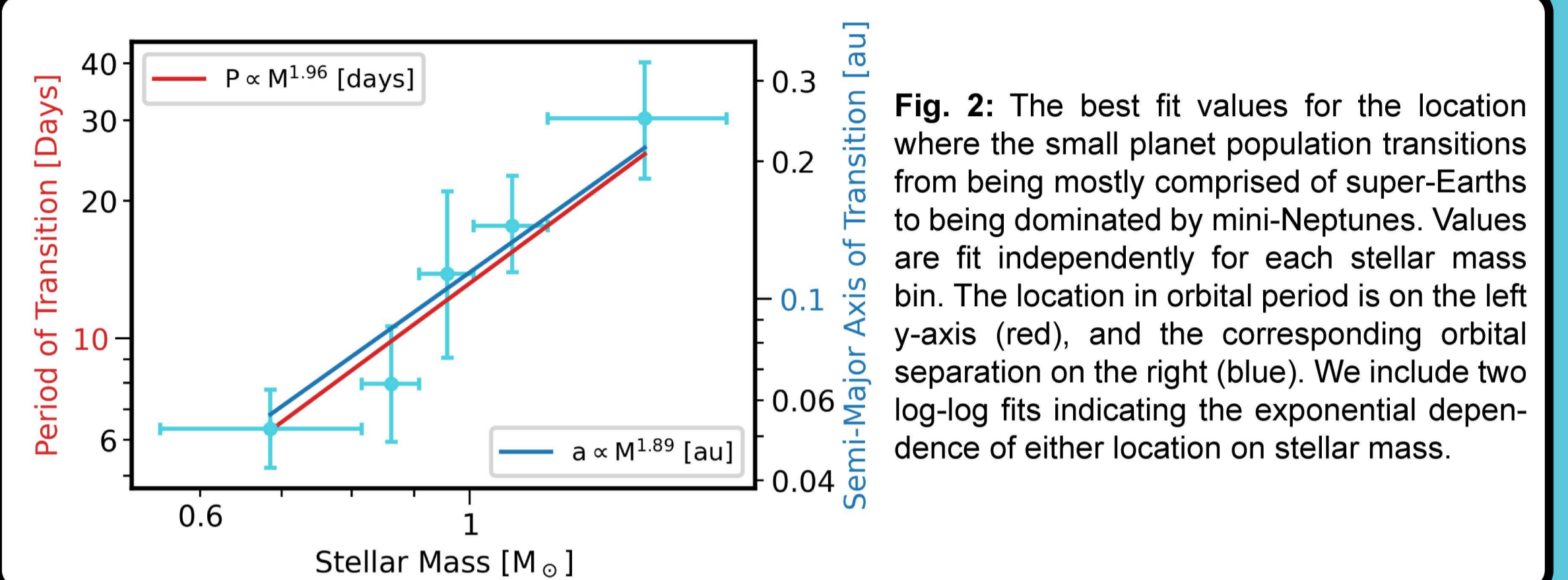
Galen Bergsten¹ | Ilaria Pascucci¹, Gijs Mulders², Rachel Fernandes¹, Tommi Koskinen¹

1 - University of Arizona, Lunar & Planetary Laboratory
2 - Universidad Adolfo Ibáñez, Chile

Trade-off between super-Earths and mini-Neptunes

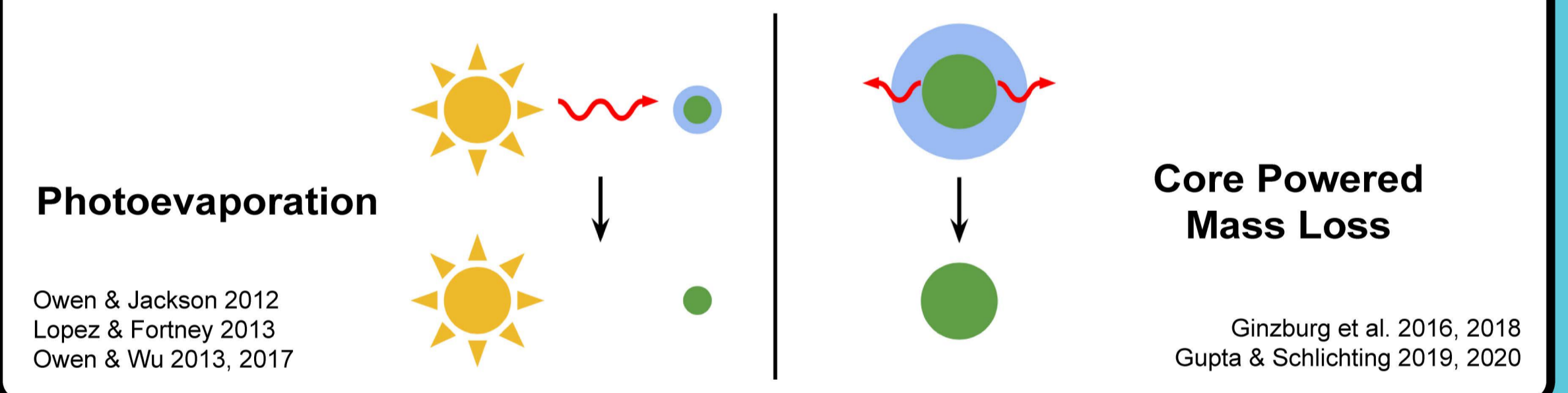


Stellar Mass Dependence of Small Planet Turnover



Connection to Evolution of Small Planets and Atmospheric Loss

- The abundance of short-period super-Earths may be due to contamination by stripped cores. TESS could study this by observing young planet populations of various ages.
- The pronounced dependence on stellar mass may help constrain the dominant mechanism for atmospheric mass loss driving the radius valley seen in small planets (Fulton et al. 2017).



Implications and Validations with TESS

- With TESS observing planetary systems in the solar neighborhood, we hope to see how these distributions compare with demographics of nearby populations.
- The search for planets around nearby M-dwarfs (excluded in this work) may help constrain transitions in the small planet population at low stellar masses.
- Ongoing work to find and characterize early exoplanets in young clusters can also study this feature, and probe how small planets and their atmospheres evolve with time.
- Our predictions for *Kepler* Habitable Zone occurrence suggest that habitable, terrestrial planets may be increasingly common around low-mass stars. Ongoing searches for similar planets with TESS will provide valuable comparisons between the two missions.

super-Earths in the Habitable Zone

