

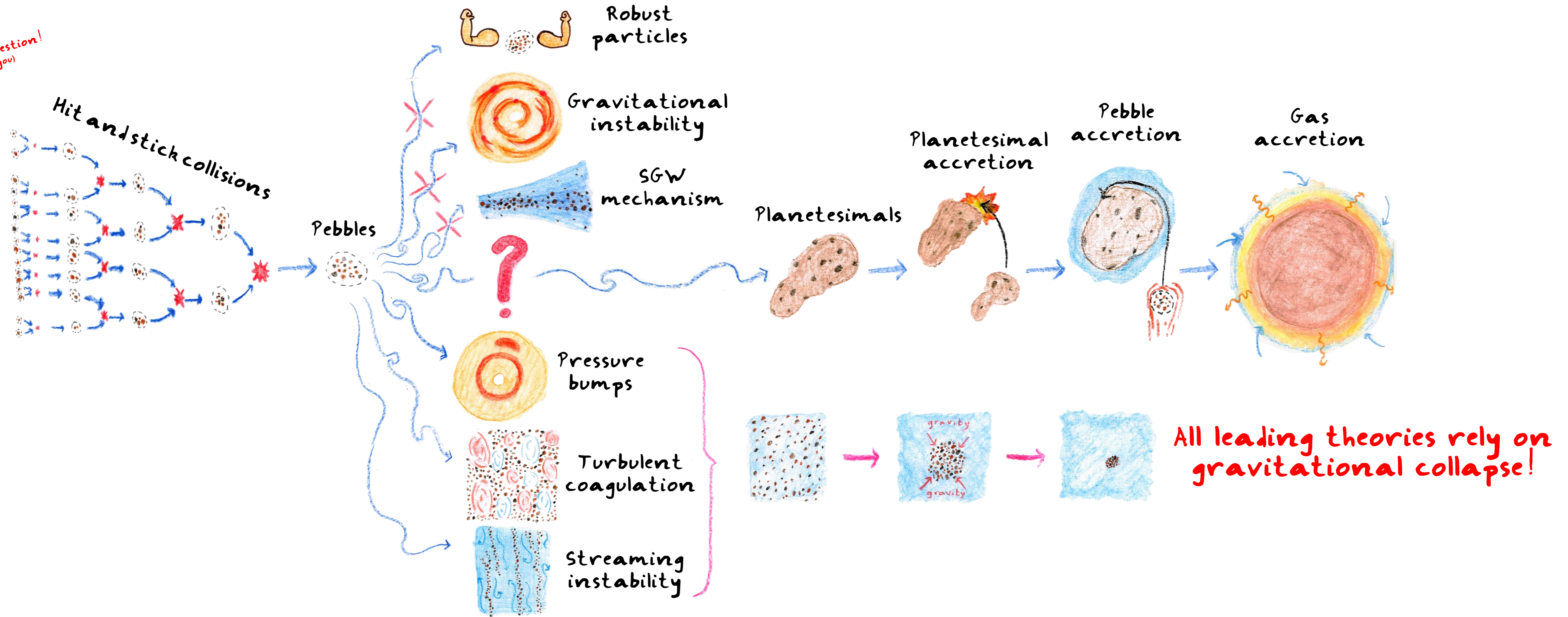
THE GRAVITATIONAL COLLAPSE OF DUST CLUMPS IN PROTOPLANETARY DISCS

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Come fetch me if you have any questions!
(I speak French if that's easier for you)

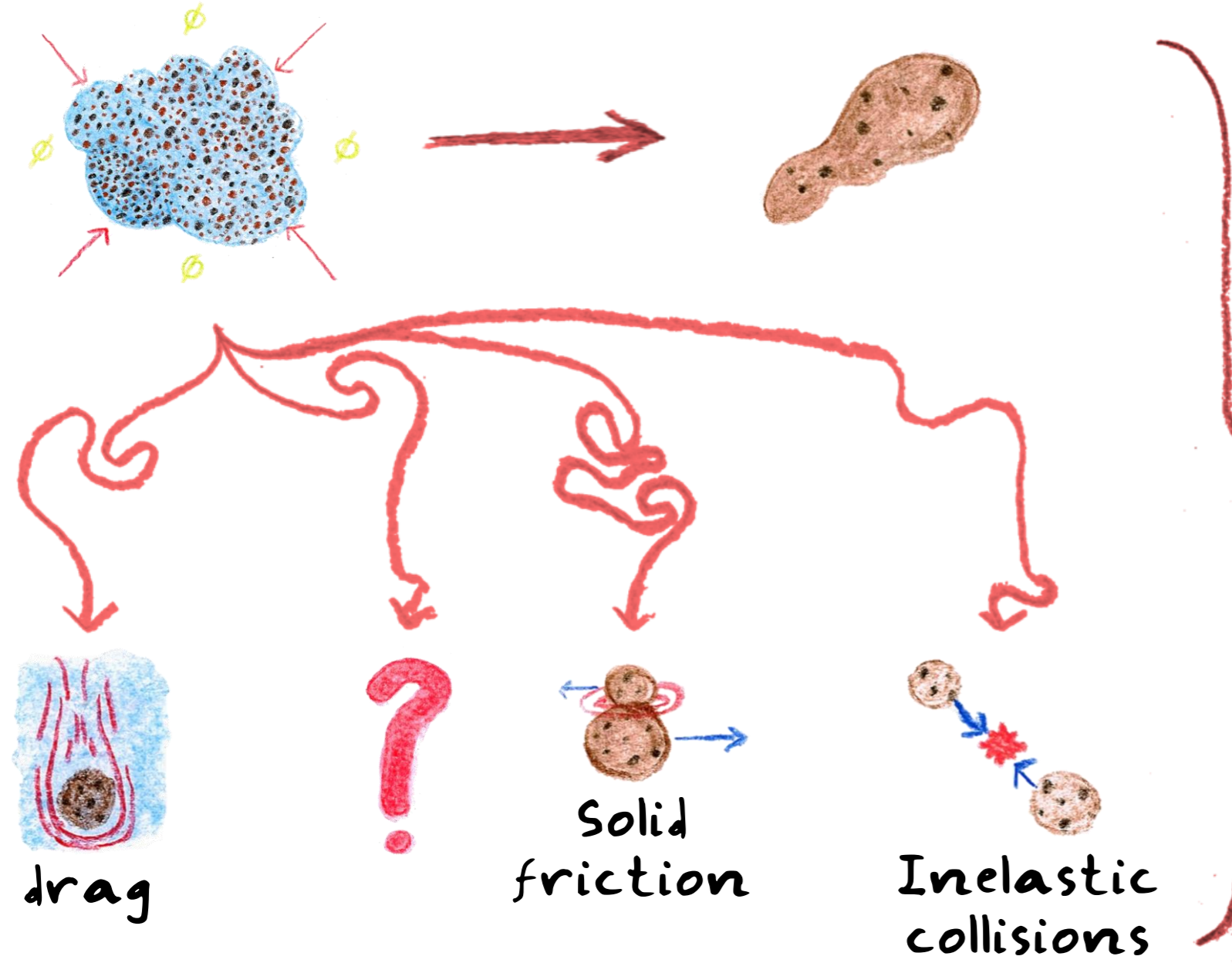
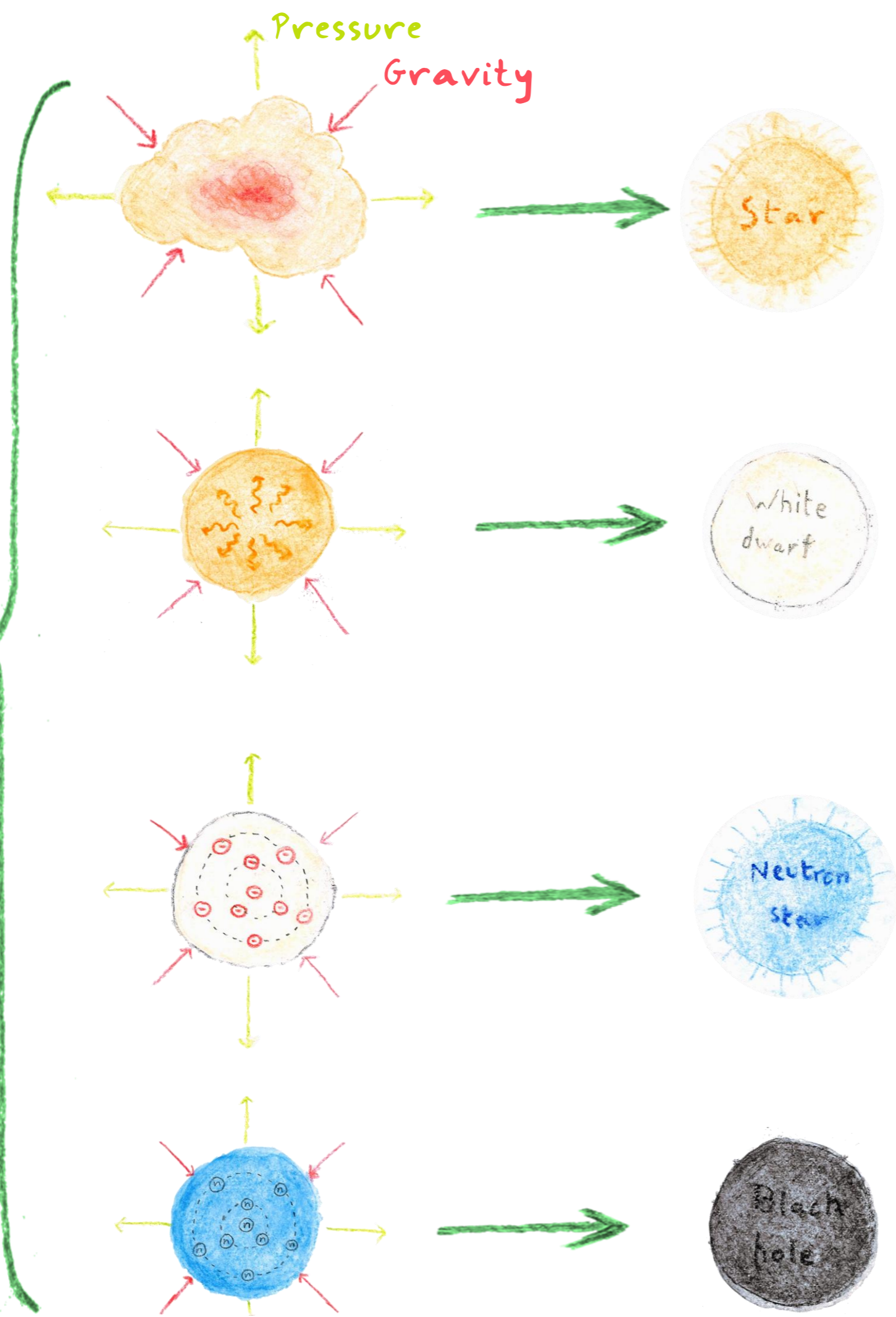
The big unknown of planet formation theory is the transition from pebbles to planetesimals



We want to understand the fundamental dynamics of dust-dominated collapse

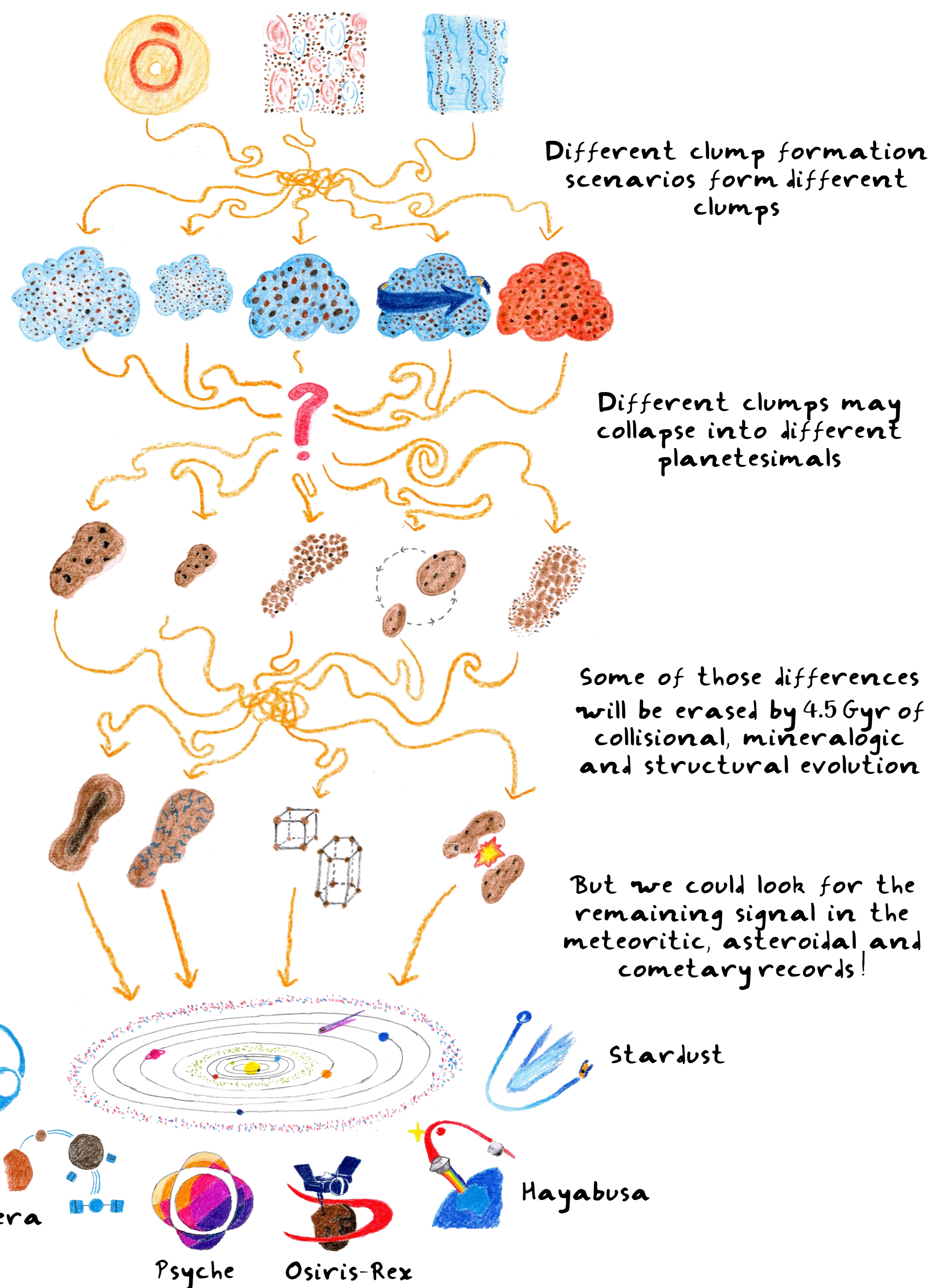
Gravitational collapse is widespread in astrophysics, but usually:

- the leading order force balance is between pressure and gravity,
- gravitational potential energy becomes heat via adiabatic compression

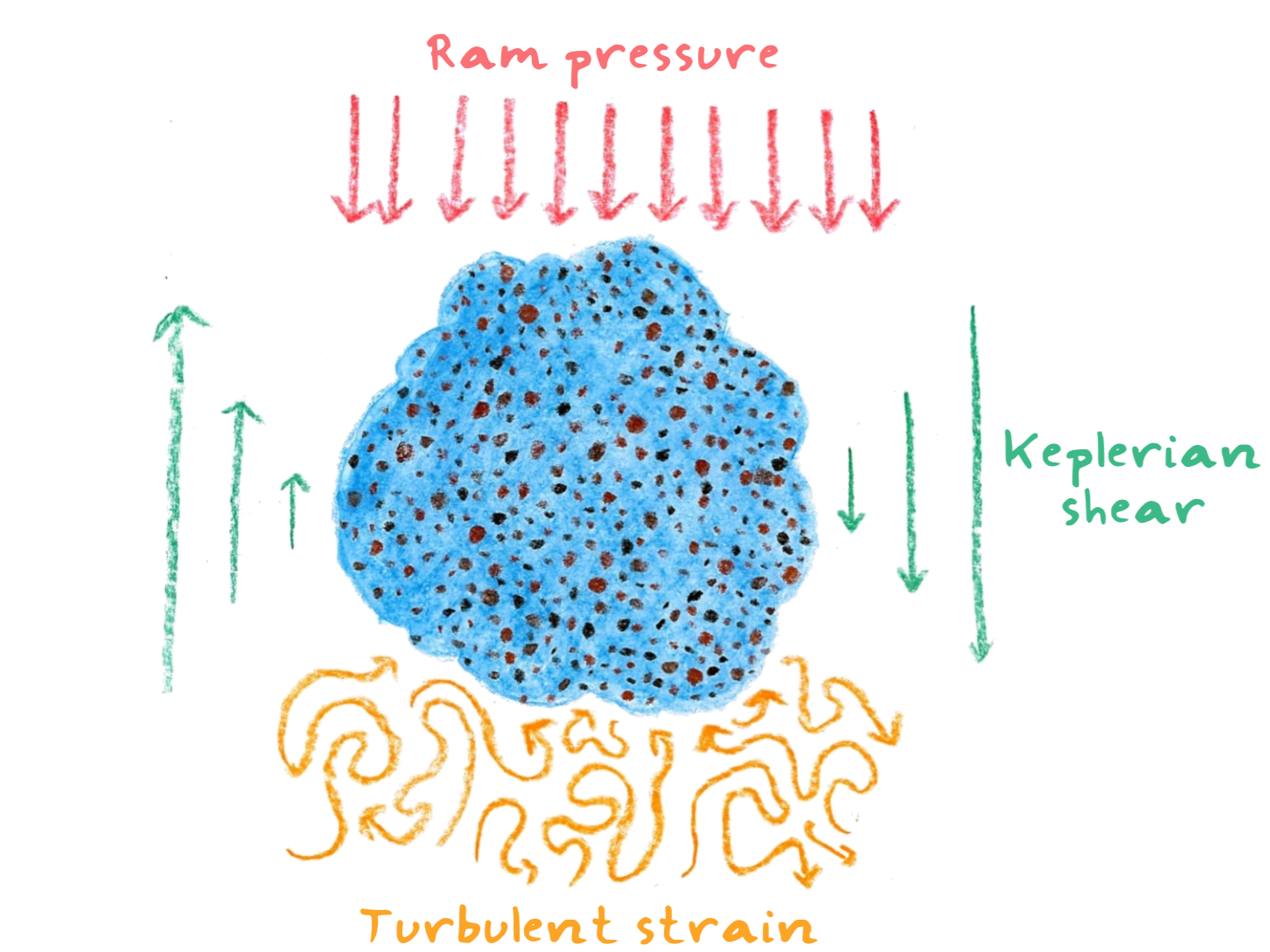


But dust is insensitive to pressure, so we need to figure out what replaces it!

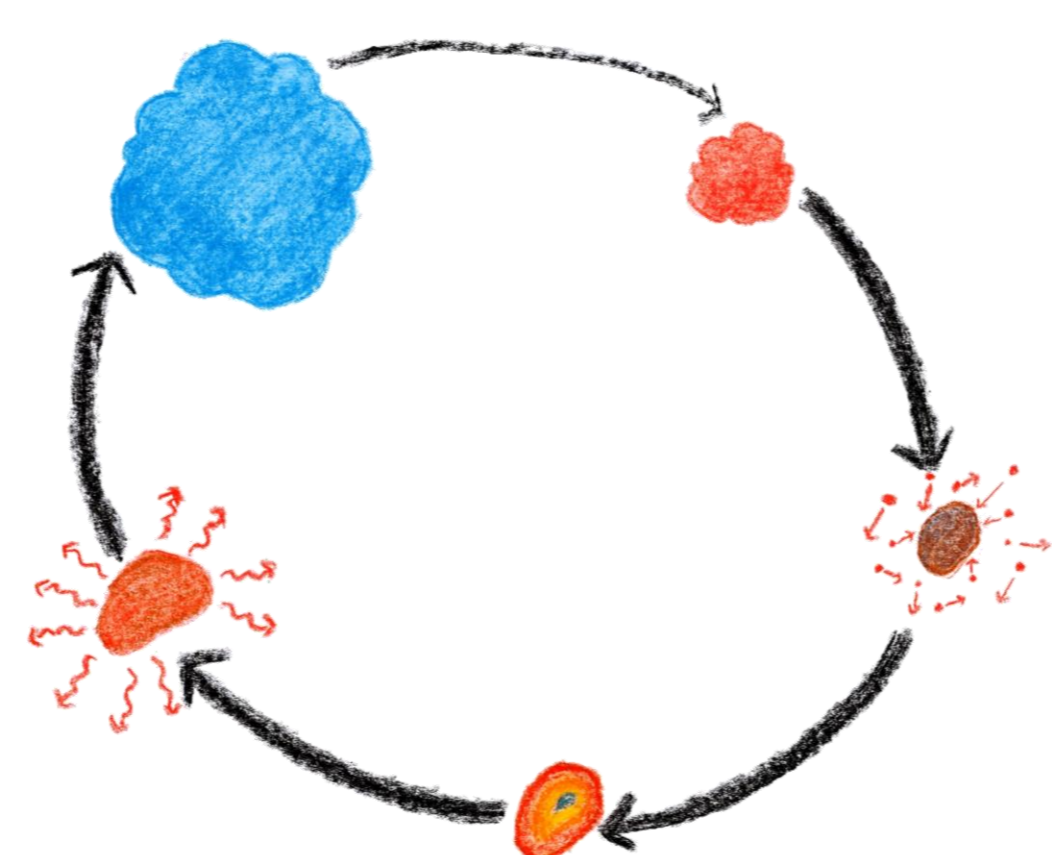
We want to determine the imprint left by the cloud formation scenario on the Solar systems' small bodies



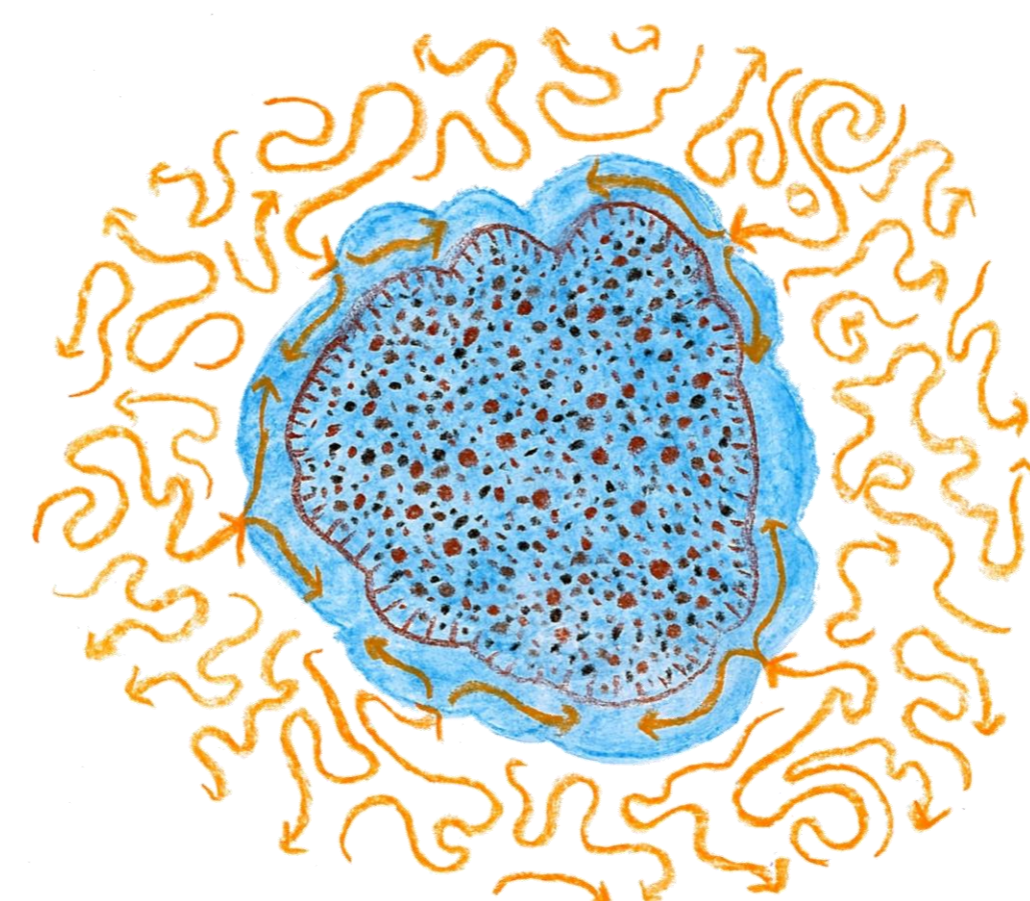
Preliminary results



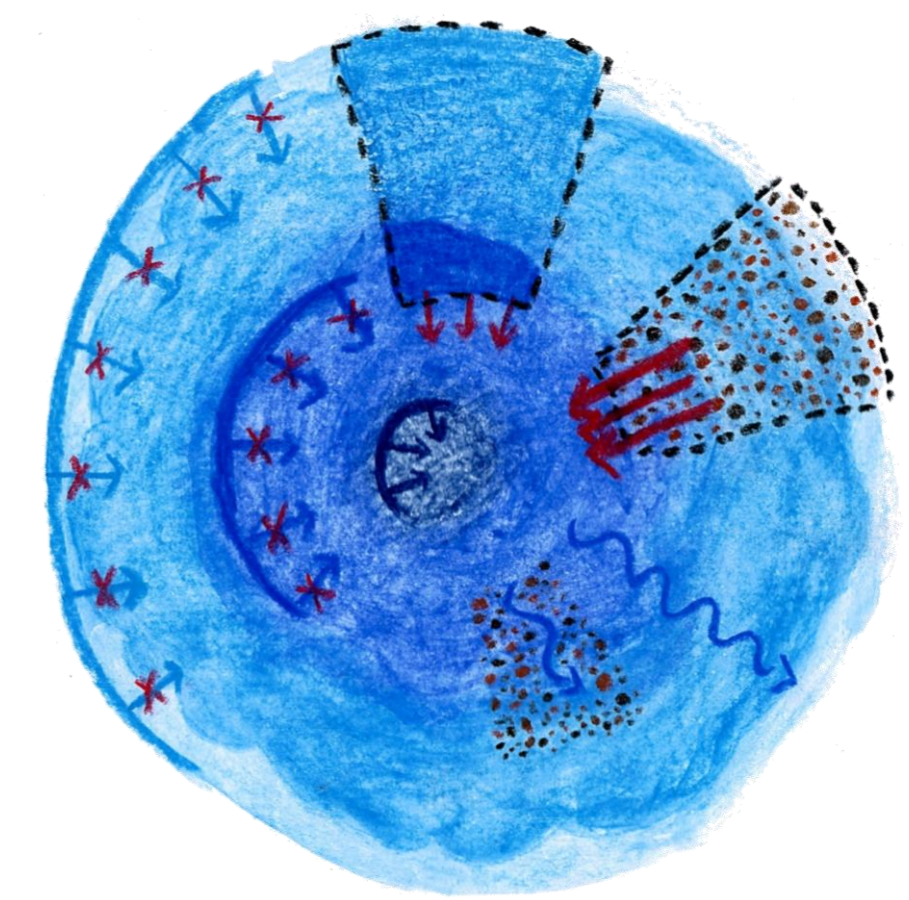
The cloud needs to be slightly smaller than the Hill radius to avoid erosion



The event is nearly isothermal



The turbulence from the disc cannot penetrate inside the clump



A modified version of Jean's criterion lets us determine whether the gas collapses