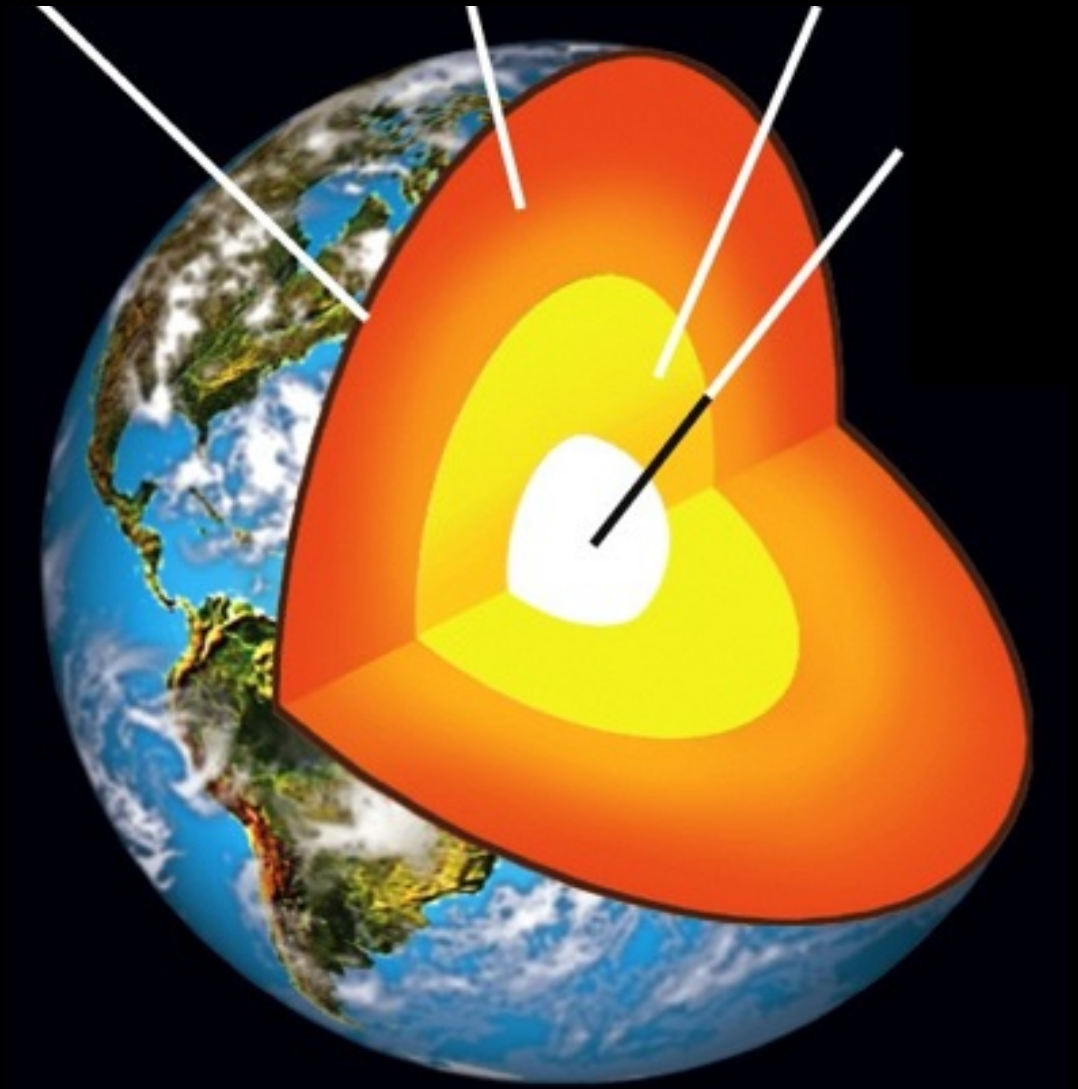
Origin and Interior of Earth

12.001 – 7 September 2012

How did the Earth form?

Courtesy of NASA. Image in the public domain.

What's on the inside, and how do we know?



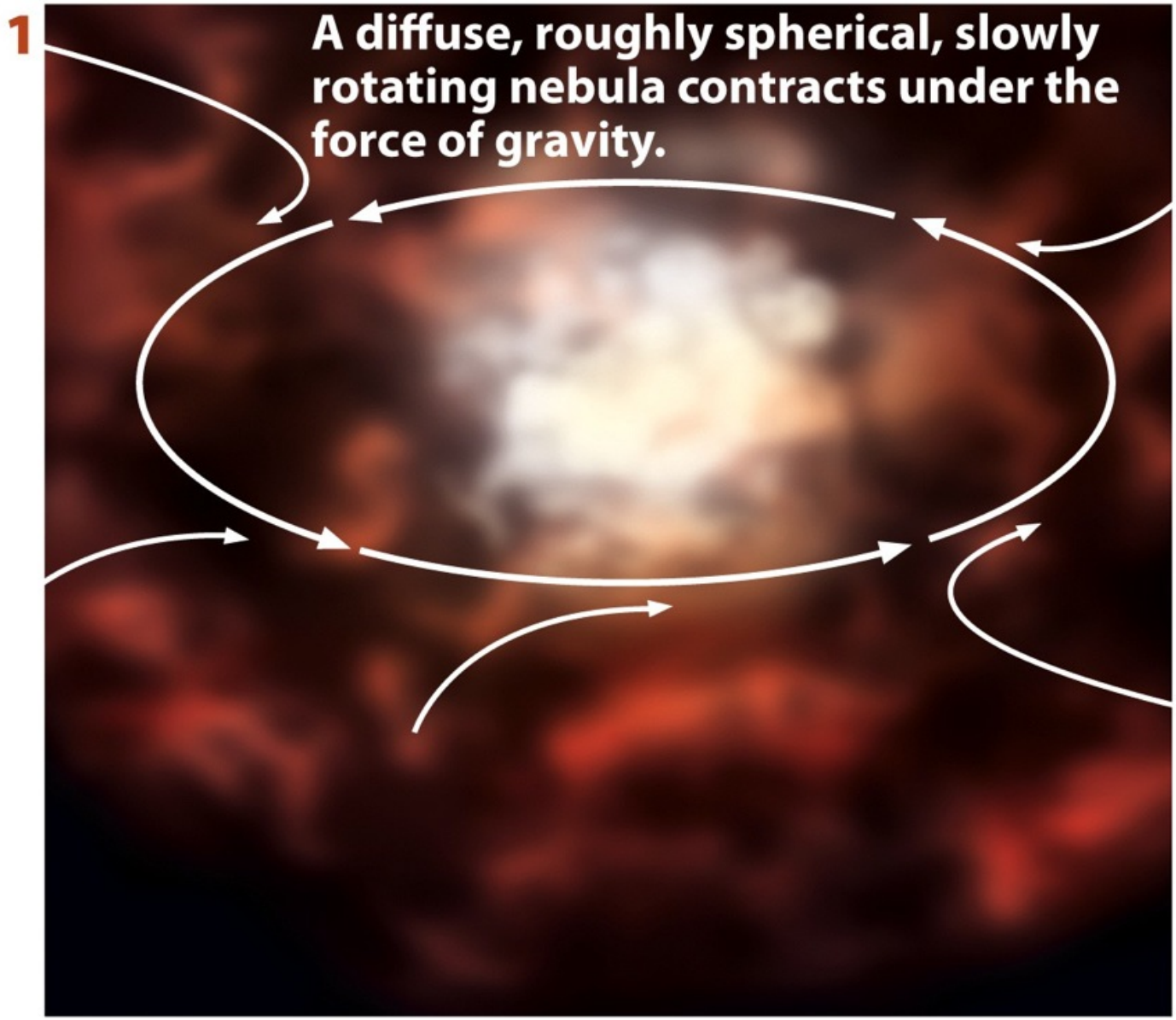


Figure 9.2 part 1
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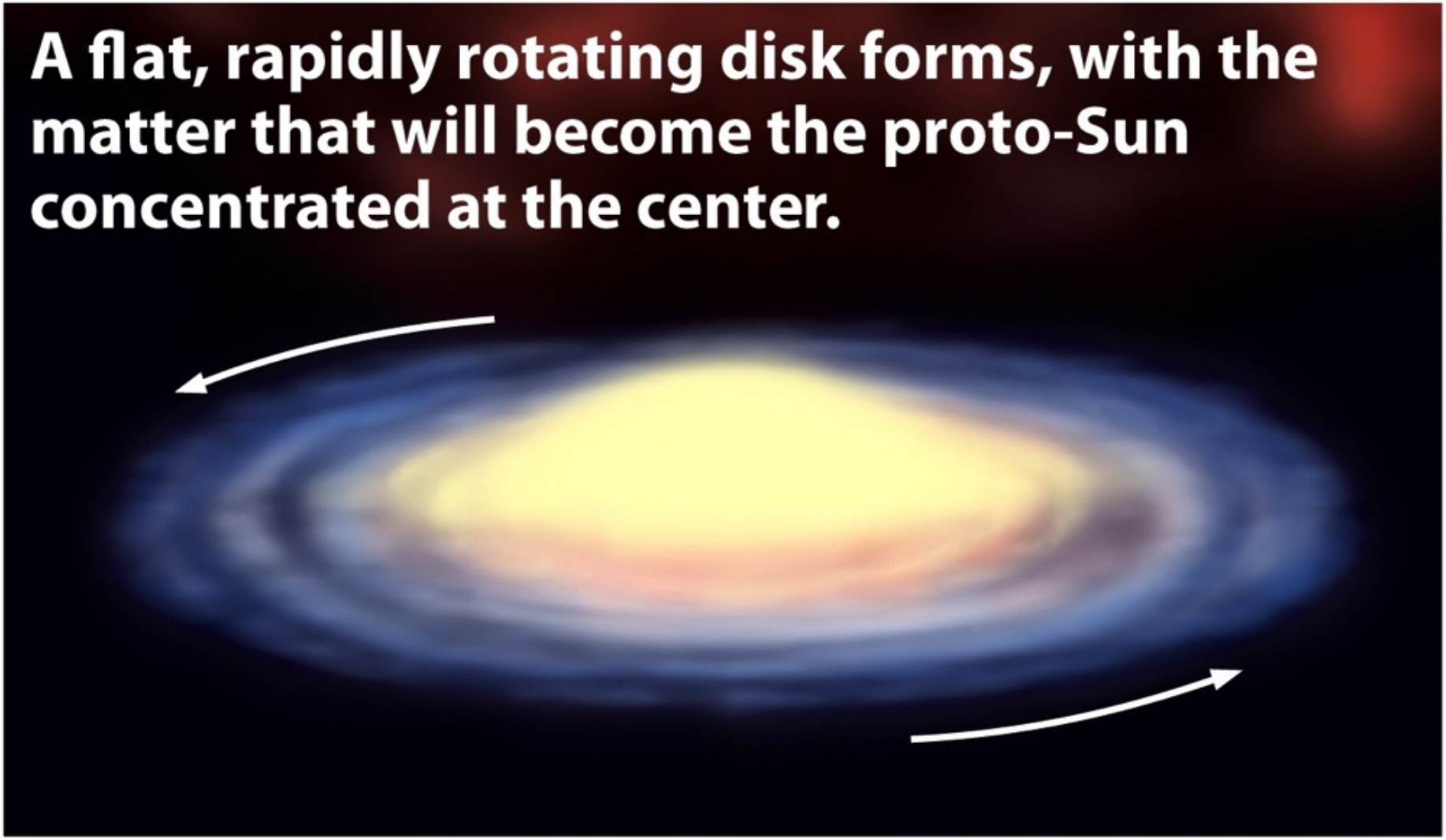

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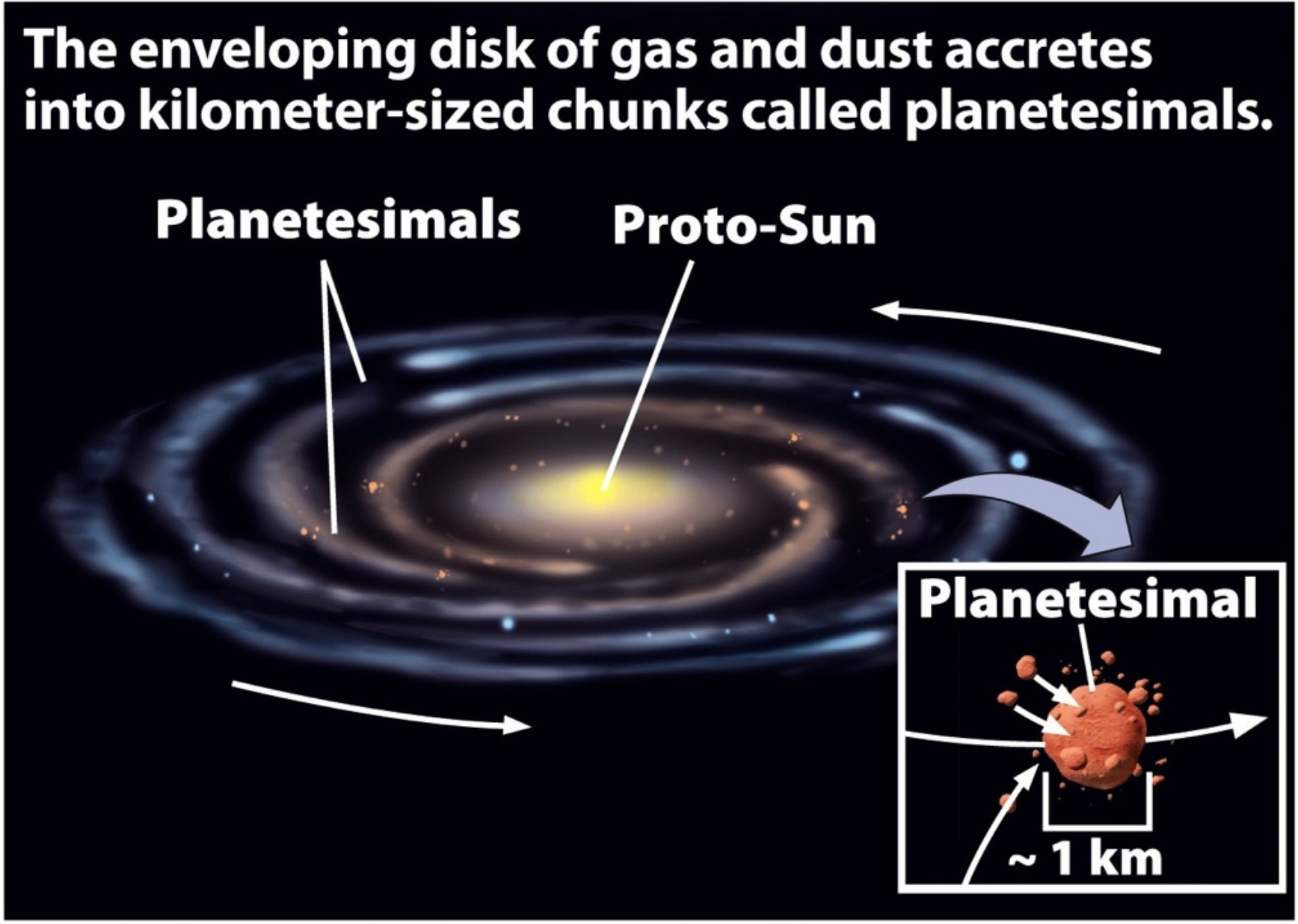
Table 2 Cosmochemical and geochemical classification of the elements.

	Elements	
	Lithophile (silicate)	*Siderophile + chalcophile (sulfide + metal)*
Refractory	$T_c = 1{,}850$–$1{,}400$ K Al, Ca, Ti, Be, Ba, Sc, V, Sr, Y, Zr, Nb, Ba, REE, Hf, Ta, Th, U, Pu	Mo, Ru, Rh, W, Re, Os, Ir, Pt
Main component	$T_c = 1{,}350$–$1{,}250$ K Mg, Si, Cr, Li	Fe, Ni, Co, Pd
Moderately volatile	$T_c = 1{,}230$–640 K Mn, P, Na, B, Rb, K, F, Zn	Au, As, Cu, Ag, Ga, Sb, Ge, Sn, Se, Te, S
Highly volatile	$T_c < 640$ K Cl, Br, I, Cs, Tl, H, C, N, O, He, Ne, Ar, Kr, Xe	In, Bi, Pb, Hg

T_c, condensation temperatures at a pressure of 10^{-4}bar (Wasson, 1985; for B, Lauretta and Lodders, 1997).



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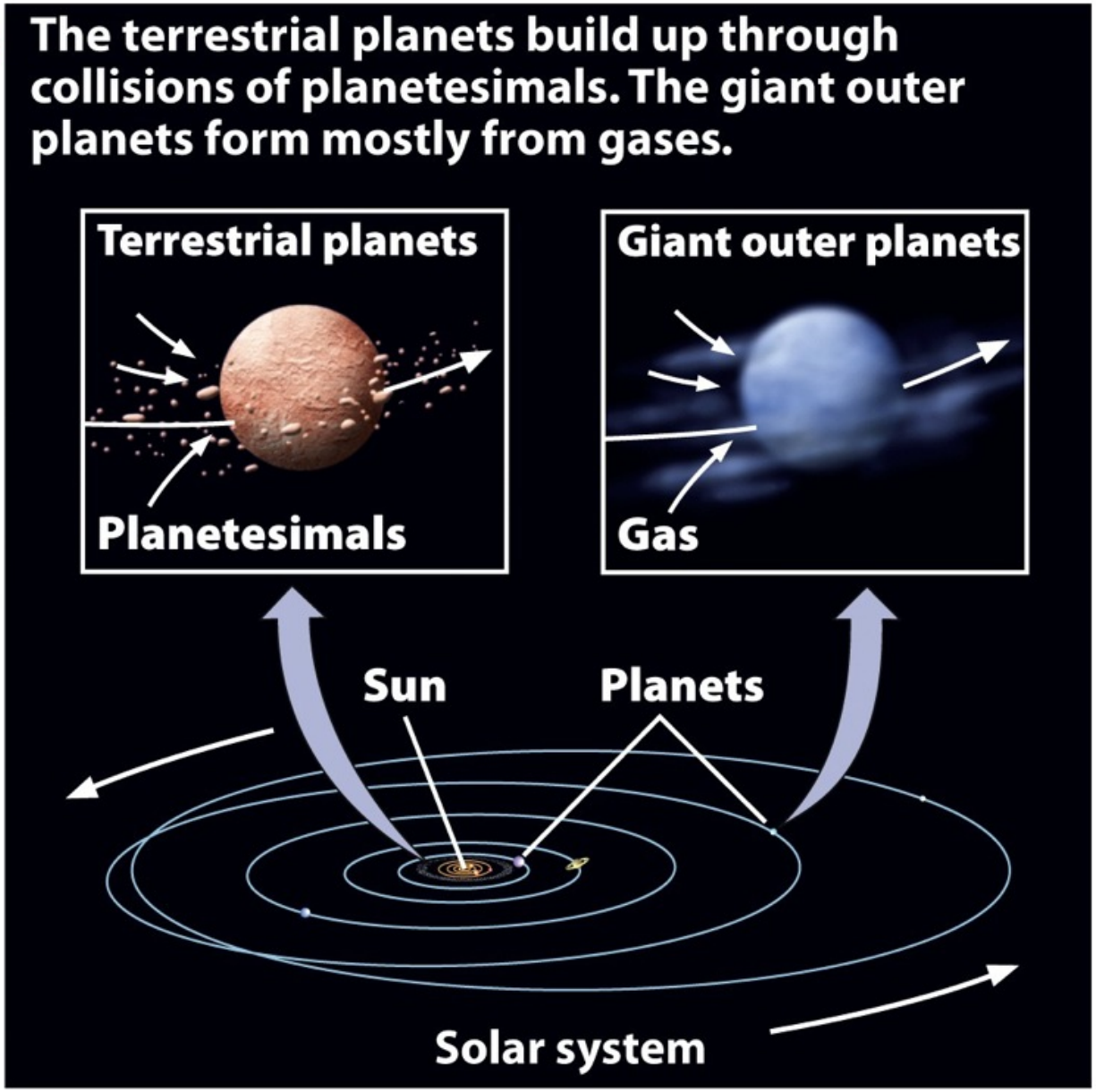

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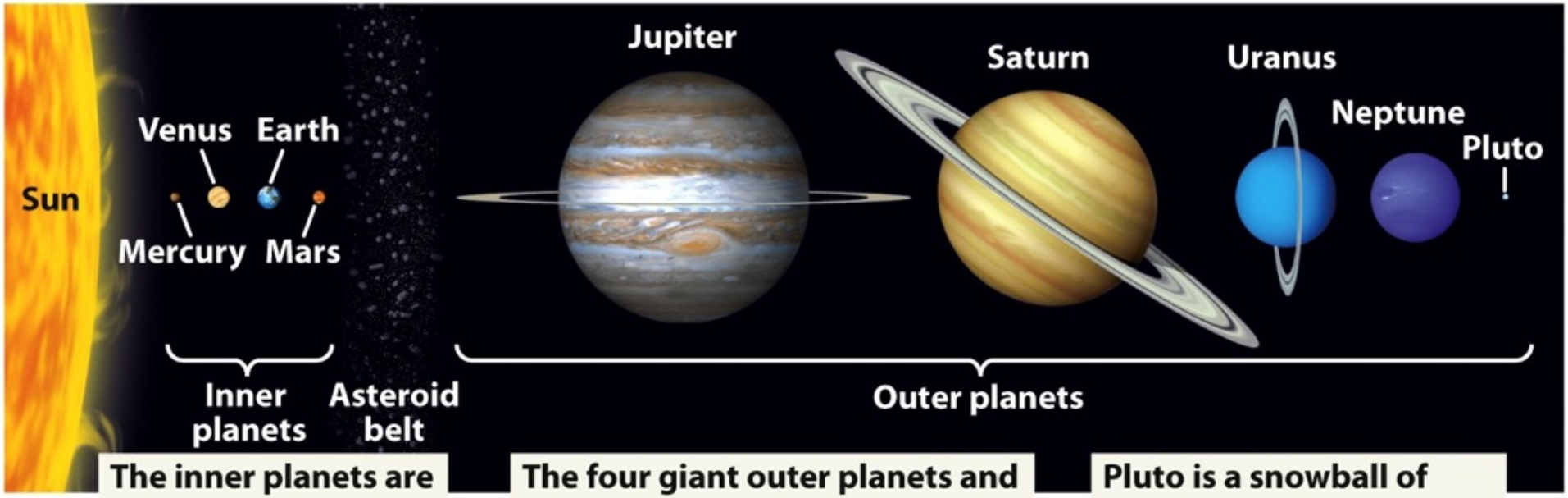

Figure 9.3
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http://www.pitt.edu/~cejones/GeoImages/1Minerals/1IgneousMineralz/Olivine/OlivineXenolithInBasalt.JPG

http://www.meteorites.com.au/media/nwa2892/3.jpg

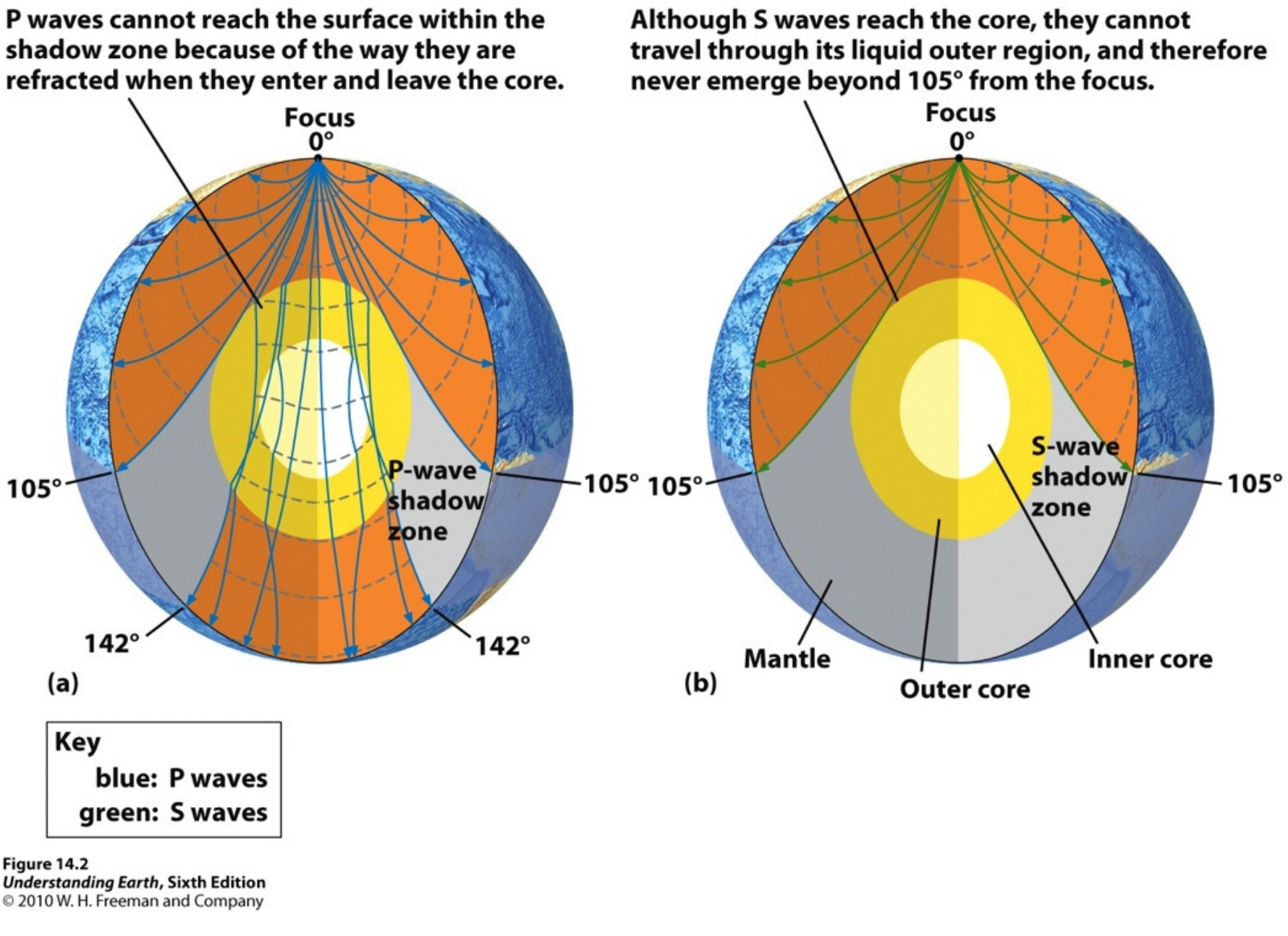

Figure 14.2
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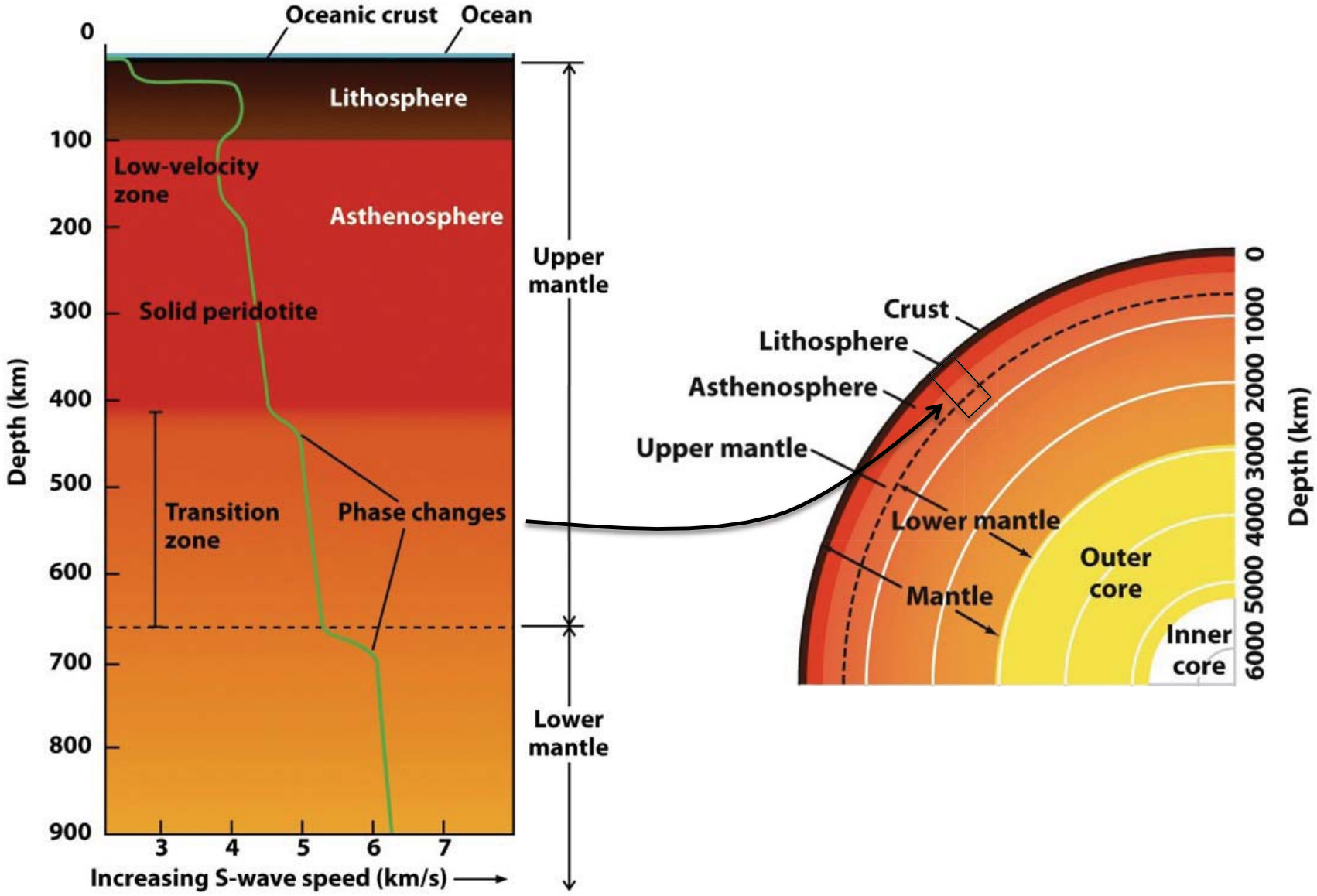

Figure 14.8
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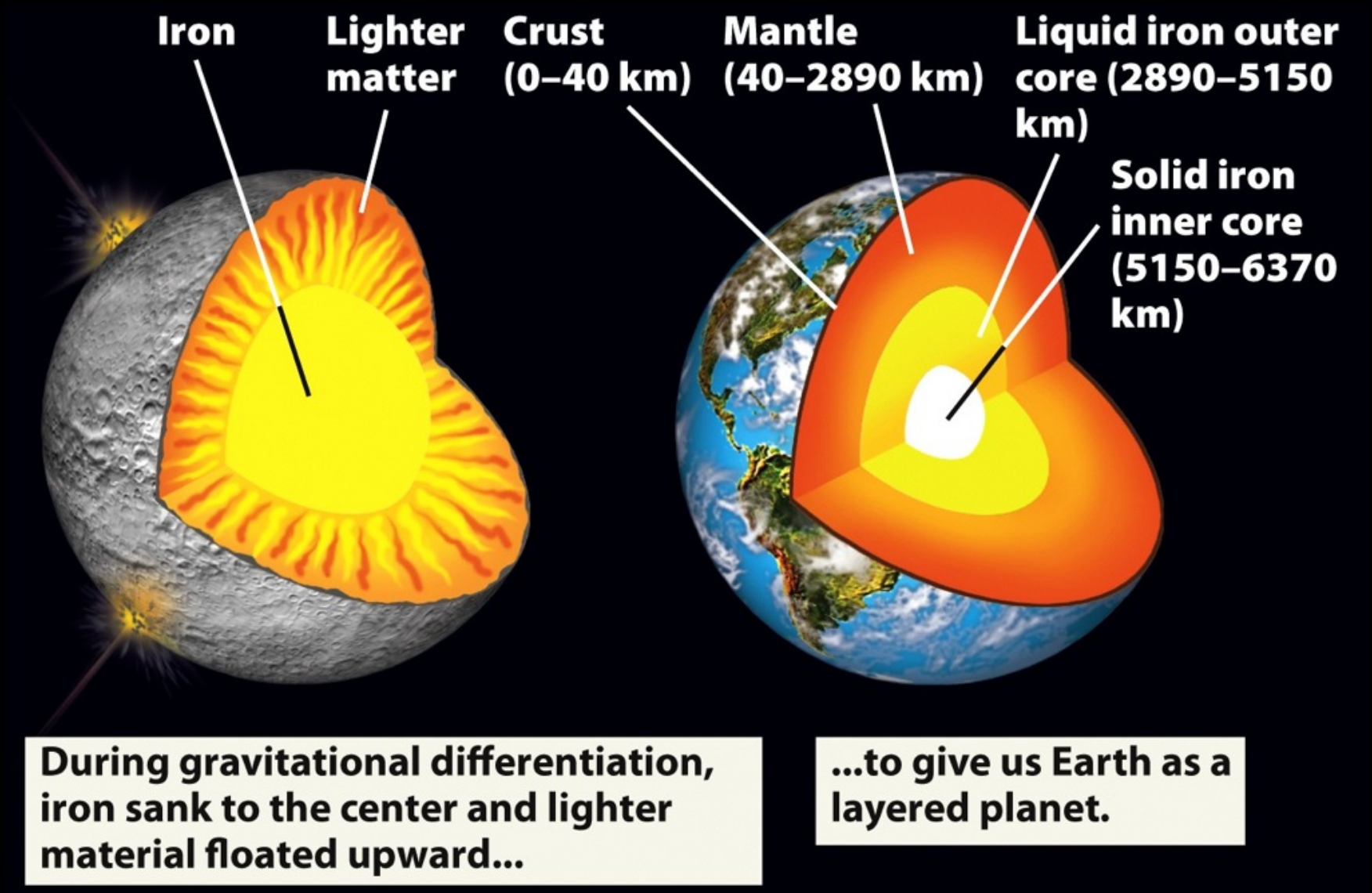

12.001 Introduction to Geology

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