



Arguments with legs to stand on

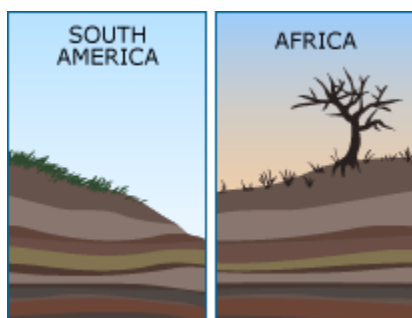
Powerful scientific ideas generate many different expectations, not just one. As an example, let's return to the idea that the continents as we know them today were once joined together into a supercontinent and have been moving apart ever since. This idea generates many different expectations; we would expect to find:



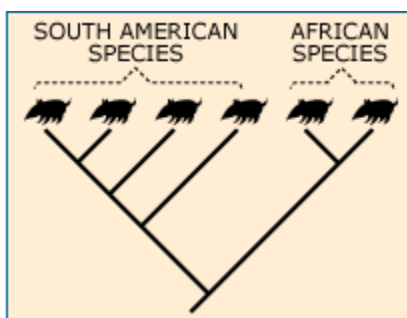
Corresponding fossils on now distant continents.



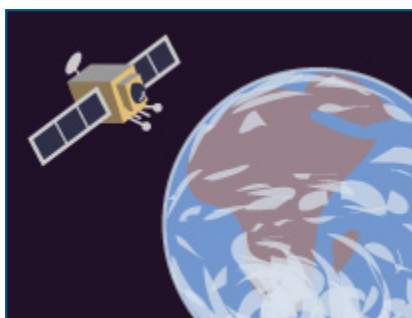
That the continents are shaped in ways that could have once fit together.



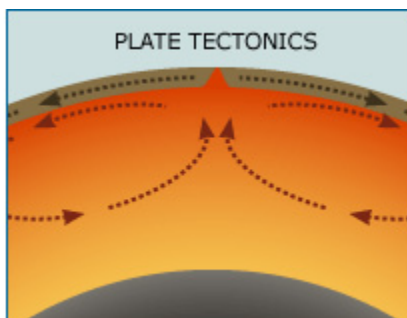
That rock layers and geological features on now distant continents match up where they were once joined.



That the evolutionary relationships among non-marine species reflect the ancient supercontinental break up.



Direct evidence of ongoing tectonic movement through sensitive satellite measurements.



A plausible mechanism by which the continents could have moved.

From ancient fossils to cutting-edge satellite measurements, the expectations generated by this idea have all been borne out in actual observations. Such diverse observations all pointing to a single idea (in this case, plate tectonics) provide that idea with robust support that can withstand the prodding and scrutiny of science—like a table built on many legs, instead of a couple wobbly ones.

So one hypothesis or theory is often related to many different sorts of expected observations—all of which reflect on its accuracy. It's no wonder then that evaluating scientific ideas is not cut and dried: some expectations generated by an idea might be borne out and support it, while others might not.