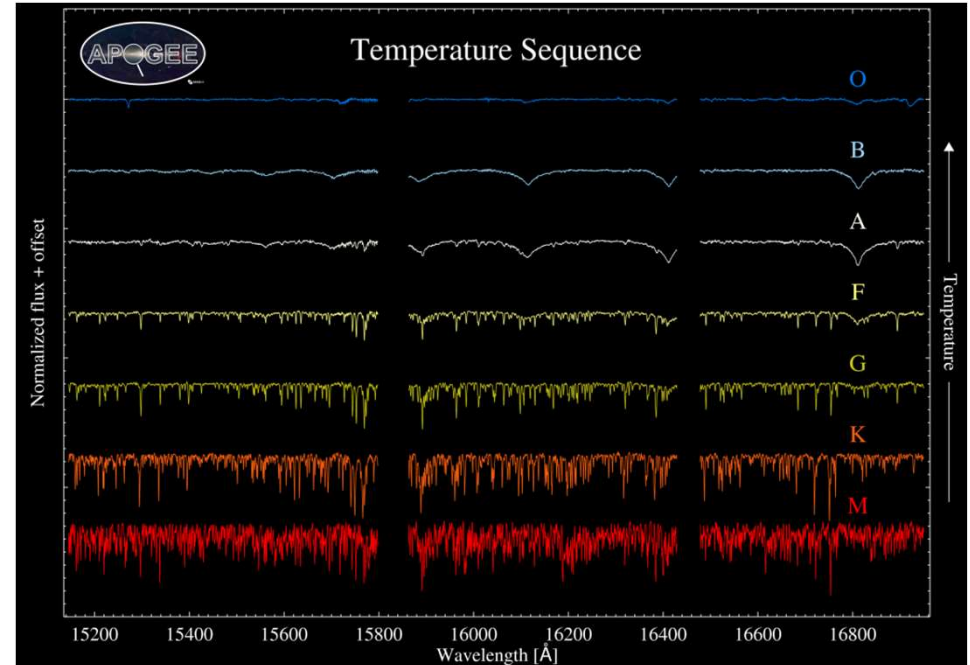
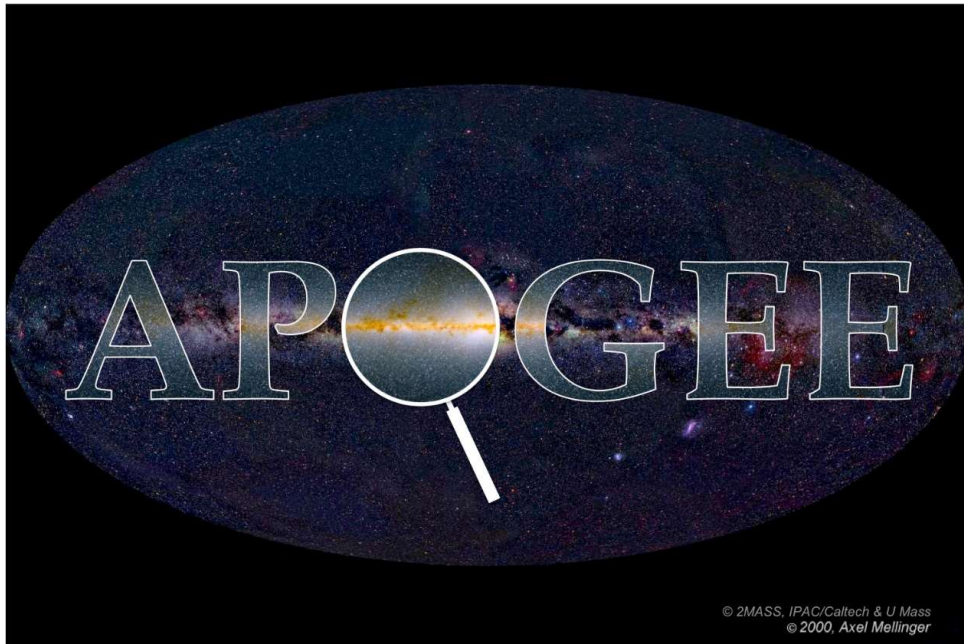


Discovery of Phosphorus-rich stars



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The APOGEE stellar spectroscopic survey

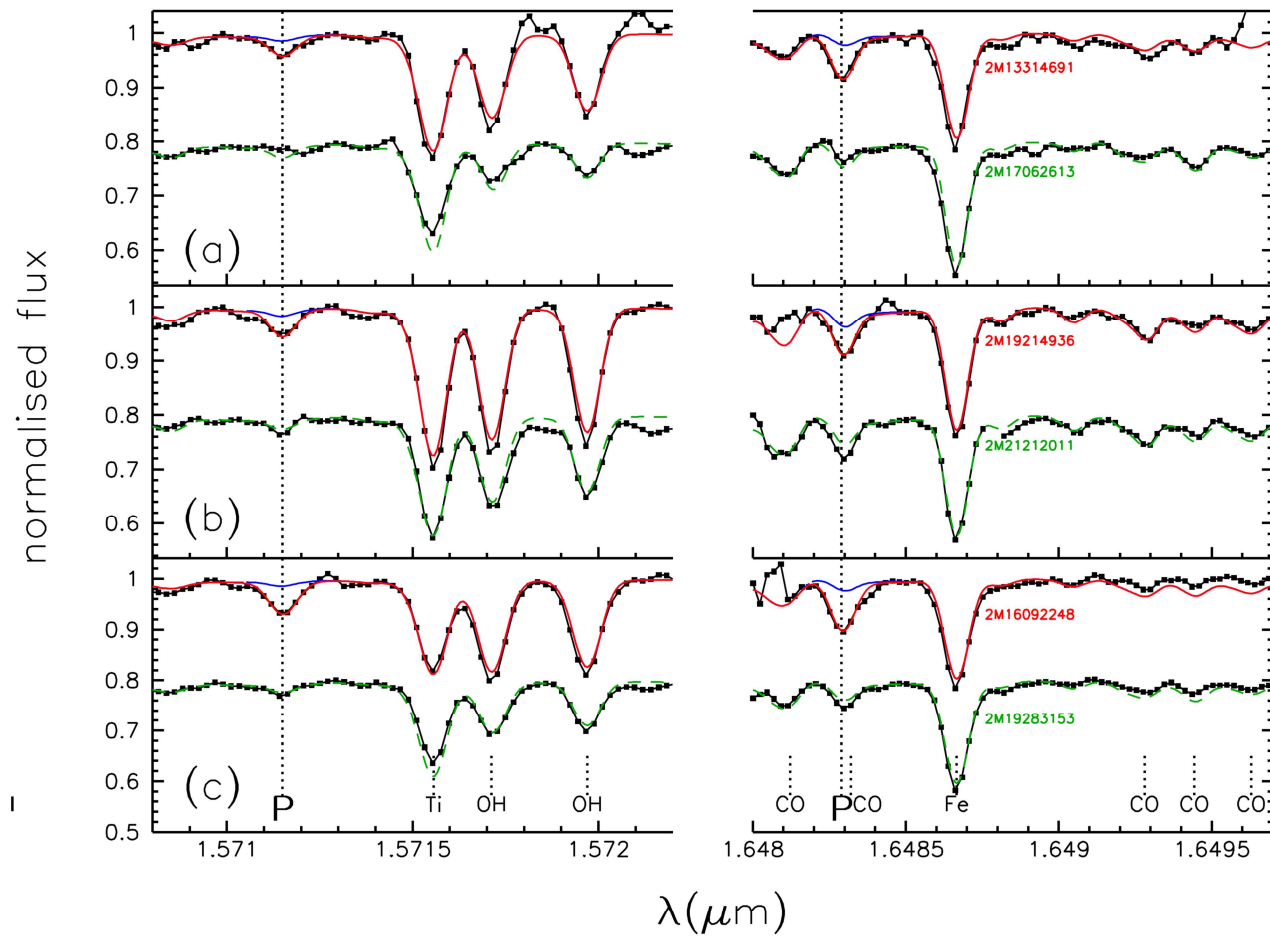


500000 stellar spectra of all kinds from all over the Galaxy

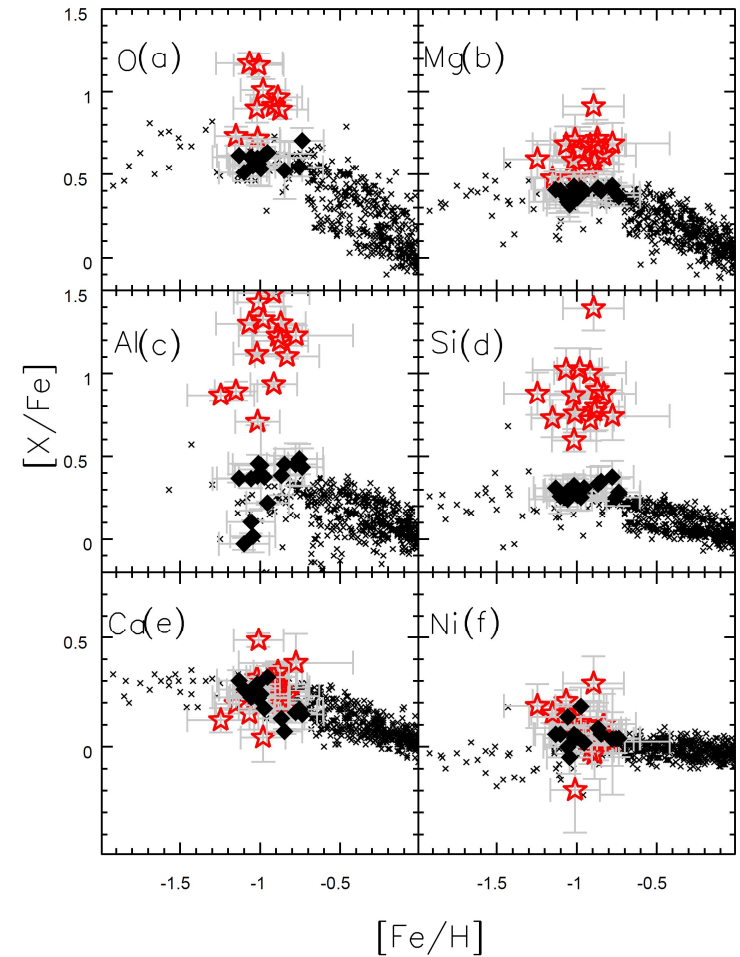
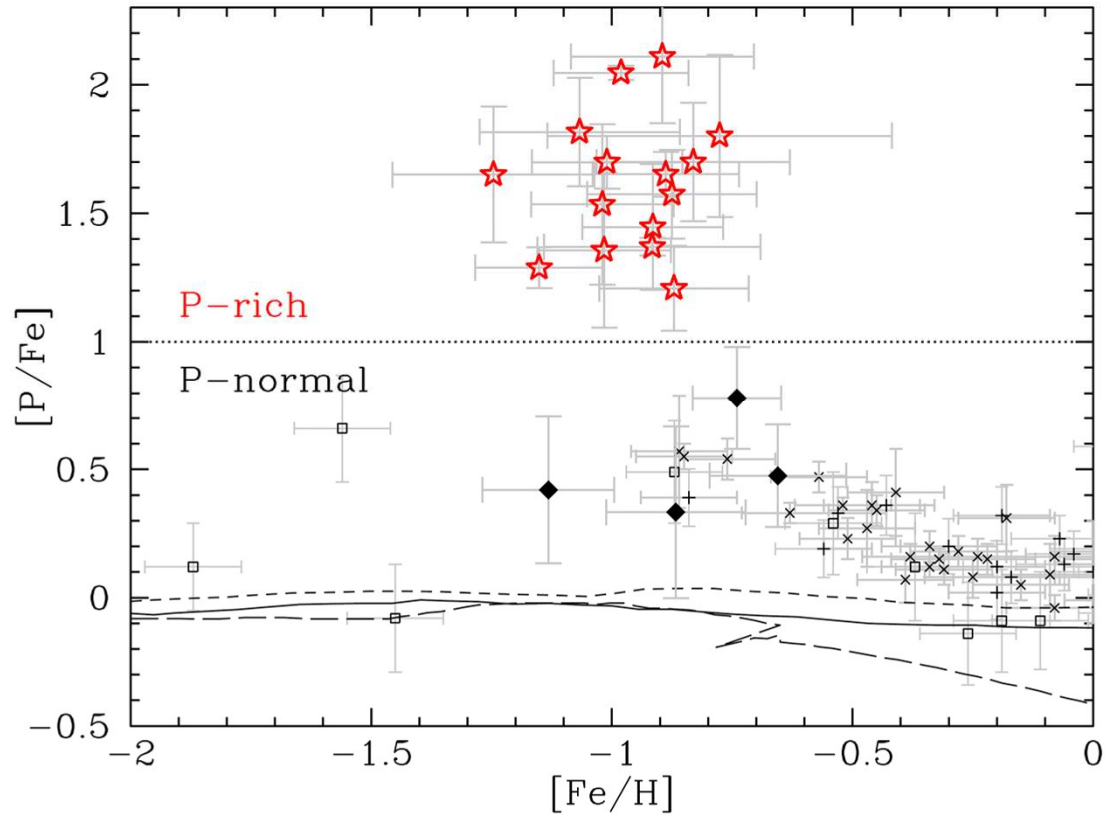
 Decipher the nucleosynthetic origin of the elements

Method:

Automatic Algorithm to detect the 2 Phosphorus lines

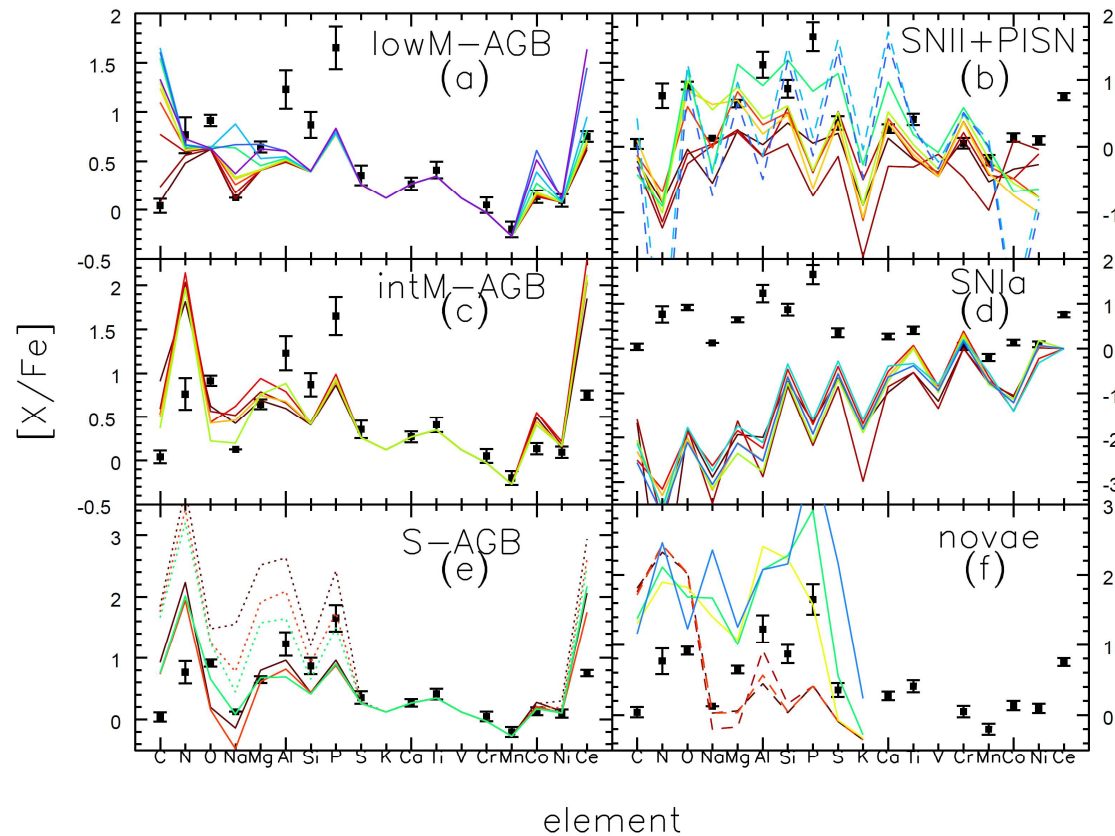


Discovery of P-rich stars



The P-rich stars also show large enhancements of O, Mg, Al, Si and heavy elements such as Ce or Ba

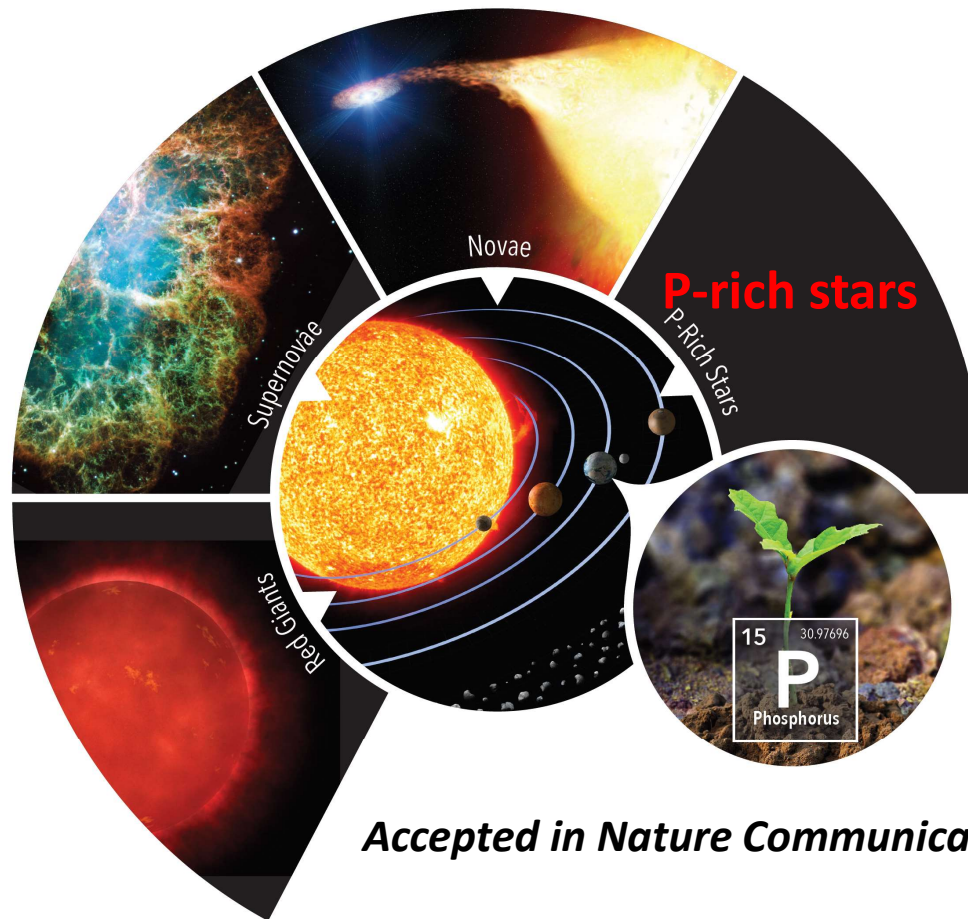
What could be the origin of those P-rich stars ?



None of the existing stellar models can explain the peculiar abundance pattern of the P-rich stars

Conclusion

- ✓ A phosphorus source is missing to explain all the Phosphorus in the Solar System
 - ✓ P-rich stars have a very peculiar abundance pattern that no theory can explain
- ➔ Could the P-rich stars have contributed to phosphorus on Earth (and life!)?



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To be continued...