

Celestial determinants of success in research

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Observations from a recent retrospective cohort analysis suggest that success is a determinant of longevity: a higher level of success may be associated with increased survival.¹ If this is true, then identifying the determinants of success would further our understanding of the mechanism that governs this association. Practitioners of astrology have, since ancient Egypt, claimed the ability to predict attributes and outcomes using the position of the heavenly bodies at a person's time of birth.^{2,3} We felt that this determinant was as plausible as any. We also felt that winning a Nobel Prize is a reasonable marker of success. Thus, we tested the hypothesis that zodiac sign is associated with the odds of winning the Nobel Prize.

Using the Nobel database (<http://almaz.com/nobel/birthdays>), we obtained the birth dates of 171 Nobel laureates in medicine and physiology. We also obtained the birth dates of 375 members of a control group comprising physician-scientists, scientists, postdoctoral fellows and other scientific trainees working at a Canadian medical research institute. None of the control subjects had ever won the Nobel Prize. We derived the zodiac signs for each study subject using established criteria.^{2,3} The results are shown in Table 1.

Using the χ^2 test, we found a general association between zodiac sign and the likelihood of having received the Nobel Prize in Medicine and Physiology ($p = 0.042$). In particular, the odds of having won a Nobel Prize were increased for people born under the sign of Gemini (odds ratio [OR] 1.90, 95% confidence interval [CI] 1.12–3.24, $p = 0.017$). Conversely, the odds of having won a Nobel Prize were decreased for those born under Leo (OR 0.35, 95% CI 0.16–0.82, $p = 0.011$).

We cannot be certain whether astrologers would have predicted the outcome of this analysis. Selective retrieval from the multitudinous traits attributed to particular astrological signs showed that "Gemini produces persons of greater intellect and more powerful invention and genius than any other sign of the zodiac"² and that Gemini are "thirsty for knowledge and eager to study."³ However, similar relevant claims can be found for people born under Leo.^{2,3}



Table 1: Distribution of zodiac signs among winners of the Nobel Prize in Medicine and Physiology and control subjects

Zodiac sign	Group; % of subjects		Odds ratio (and 95% CI)
	Nobel laureates <i>n</i> = 171	Control subjects <i>n</i> = 375	
Aquarius ♒	6.43	9.33	0.67 (0.33–1.35)
Pisces ♓	8.77	8.53	1.03 (0.54–1.96)
Aries ♈	9.36	7.20	1.33 (0.70–2.54)
Taurus ♉	4.68	8.80	0.51 (0.23–1.13)
Gemini ♊	16.37	9.33	1.90 (1.12–3.24)
Cancer ♋	6.43	8.00	0.79 (0.39–1.62)
Leo ♌	4.09	10.67	0.35 (0.16–0.82)
Virgo ♍	11.07	10.67	1.11 (0.63–1.96)
Libra ♎	8.19	8.00	1.03 (0.53–1.99)
Scorpio ♏	8.77	5.87	1.54 (0.78–3.05)
Sagittarius ♐	10.53	8.00	1.35 (0.73–2.50)
Capricorn ♑	4.68	5.60	0.83 (0.36–1.91)

Note: CI = confidence interval.

We do not propose that astrology is equivalent to the retrospective, cross-sectional analyses performed by clinical evaluative scientists. After all, astrology provides an internally consistent explanation for its observations, although typically without statistical justification. In contrast, scientists must accept the less satisfying explanation that foraging through databases using contrived study designs in the absence of biological mechanistic data sometimes yields spurious results.



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Competing interests: Rebecca Pollex and Bob Hegele were born under the sign of Scorpio, and Matthew Ban is definitely a Leo.

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