editorial

Mark Murcko

Drug Discovery: aiming for the moon?

Forty years ago today men landed on, and walked on, the moon.

Many others have spoken far more eloquently than I can about the enormity of this event. It was a technical *tour de force* – arguably the greatest achievement in history. Everything had to be invented from scratch under insanely tight timelines and pressure. It was risky, but those dangers were clearly understood and approached with eyes wide open. The astronauts would swagger, as they must, and the public face of NASA was always positive – but the astronauts knew, as did everyone connected with the program, what they were up against.

People like me, who are old enough to actually remember the events of July 1969, are instantly assailed with powerful and reflexive emotions when we think back to the effect Apollo had on us: the excitement, awe and wonder. My family, like so many others, was obsessed with space exploration. The walls of our den were covered with NASA photos, diagrams and technical bulletins – anything we could get them to send us. Models of rockets hung from the ceiling by fishing line. There was no question of going outside to play ball that afternoon and missing the landing, or going to sleep that evening and missing the moonwalk. That would be crazy talk. (The cosmography *chez* Murcko was: moon landing $>$ baseball $\gg$ everything else). We soaked it all in, and the events of that day remain a seminal memory of my childhood. It was glorious; nothing could possibly be more exhilarating.

And yet...there are some interesting parallels to what all of us, engaged in the roiling tumult of biomedical research, do here and now. Our mission – to invent new therapies that transform human health and alleviate suffering – captures the imagination as profoundly as did Apollo. Our efforts once were regarded with the same admiration as the NASA breakthroughs (and while public perceptions may be different today, our mission has not wavered). We are attempting, one could argue, even more complex technical achievements. We are inventing much of it as we go. We must integrate the phenomenally diverse and highly technical efforts of thousands of professionals around the globe. The stakes are very high, there is intense pressure, and we face profound challenges at every turn. We can all cite the litany: the staggering capital requirements; the enormity of interconnected factors that determine, in ways often only partially understood, whether the work will yield or *not* yield a lifesaving therapy; the complexity of deciding, always with less data than we need, which projects to pursue and which to shelve; the struggle to interpret irreducibly messy data; the years of concerted effort required to achieve any significant outcome; the need for unflagging resilience notwithstanding the many setbacks and long odds.

Despite these risks and challenges, our mission consumes us; as well it should, given its promise to improve the human condition. We should be just as proud, excited and optimistic as the engineers and scientists who put us on the moon 40 years ago.

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1359-6446/06/$ - see front matter doi:10.1016/j.drudis.2009.08.001