FILM

The quest for immortality

The Fountain
directed by Darren Aronofsky
Warner Brothers
US release, 22 November 2006

Emma Marris

The Fountain defies characterization by genre. Aimed at arthouse audiences, it uses one actor — Hugh Jackman — to play the lead in three ambiguously related stories. Is he the same man? We're not sure. The three stories are set hundreds of years apart, but the common theme is the search for immortality, so he could be. The film won the Alfred P. Sloan Foundation's annual prize for a feature film dealing with science and technology at the Hamptons International Film Festival this October. Its director, Darren Aronofsky, has previously directed *Requiem for a Dream* and *π*, a film with a mathematician as protagonist.

In one of *The Fountain*'s three strands, a scientist (Jackman) races to find a drug that will stop the growth of brain tumours before his wife (Rachel Weisz) dies of one. In dramatizing this situation, Aronofsky compresses into about four minutes the whole process of drug discovery, from lead identification right through primate testing. In scenes that intentionally call to mind TV hospital dramas, lab-coated scientists whirl around barking jargon at each other, their eyes wide with earnest concentration.

Here, a researcher in the audience might think, is science finally presented as the dramatic and compelling endeavour it is. The film makes science look sexy, and without wholly departing from actual lab realities. Indeed, the film was co-written by Ari Handel, who has a PhD in neurology but left the academic track to make films with his college room-mate, Aronofsky. Handel's job was to keep an eye on accuracy. At one point, the hero's boss snaps at him for testing a drug on a monkey on a whim, saying: "The NIH could shut us down." On the other hand, the lab in the film is ridiculously stylish and tidy, but then Hollywood always gives characters apartments they couldn't possibly afford too.

WARNER BROS PICTURES

In a biosphere bubble in the future, Hugh Jackman's character in *The Fountain* accepts the idea of death.

The film is not really about science, but rather attitudes to death. In the first strand, Jackman plays a Spanish conquistador who hopes to use Christianity to cheat death, which is wrong, wrong, wrong, the film says. And it is the Jackman character in the third segment who, while flying through space in an attractive biosphere bubble and working on his weightless tai chi, figures out that the appropriate response to death is acceptance. For those who are impatient with modern, diffuse spirituality, this comes across as pretty silly stuff.

Back in the central science strand, Jackman's character says: "Death is a disease just like any other, and there is a cure and I will find it." But here we are seeing one of the oldest tropes about scientists played out yet again: the scientist as an allegorical figure of hubris. ■

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Bugs with bugs

Big Fleas Have Little Fleas: How Discoveries of Invertebrate Diseases are Advancing Modern Science
by Elizabeth W. Davidson
University of Arizona Press: 2006. 208 pp.
$35 (hbk); $17.95 (pbk)

Mark L. Winston

Insects get sick too, and the curious invertebrate pathologists who have delved into this diseased world have revealed some compelling insights into nature, illness and scientific practice. That is the basic premise of *Big Fleas Have Little Fleas* by Elizabeth Davidson, a book based on tales about the diverse organisms that plague not just insects, but crustaceans and horseshoe crabs too. The author draws on these pathologies to open the door on biological complexity and the splendour of scientific enquiry.

Davidson takes us through stories of infestations and plagues, uncovering how scientists have methodically unravelled both basic principles and potential control measures by studying parasites and diseases of invertebrates. European investigations into rotting silkworms in the nineteenth century found maladies caused by fungi and protozoans, and inspired Pasteur to establish the field of epidemiology. Elegant research into cholera found the causative bacteria *Vibrio cholerae* hitchhiking globally on copepods, and led US scientist Rita Colwell to suggest filtering drinking water in India through old sari cloth, a simple control measure that cut infection rates in half. Infestations of gypsy moths today are partly controlled by an arsenal of pathogens whose biology and utility have emerged from more than a hundred years of research.

Much of the work described in the book occurred during the founding era of invertebrate pathology, before the availability of technologies such as gas chromatography, electron microscopy and gene sequencing. Davidson's book reminds us that intuition, rigorous thinking and thorough probing were the most important scientific tools for these early researchers.

Unfortunately, Davidson does not use a similar rigour to probe the relevant policy issues, such as why biological control remains a minuscule sideshow compared with chemical pesticides. Viral, fungal, protozoan, nematode and bacterial agents can provide a solution but