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“A specific drug against cancer? This is very unlikely”

Interview with George Gabor Miklos, CEO of the independent consulting firm Secure Genetics in Newport Beach, Australia, and one of the most prestigious critics of the cancer stem cell theory

Interview by Torsten Engelbrecht
(see original interview in German under
www.torstenengelbrecht.com/artikel_wissenschaft/CSCs_WOZ_140808.pdf)

Engelbrecht: GlaxoSmithKlein invested $1.4 billion in developing drugs to kill cancer stem cells. Doesn’t this show that the concept has potential?
Miklos: No. There is a huge difference between a concept that makes biomedical sense and an attempt to reap commercial benefits. The total sales of GlaxoSmithKline are said to decline significantly, and in cancer medicine the company fears a total drop-off – which is why GSK is grasping at everything that generates revenue. Perhaps the company has also let itself get carried away by the hype about normal stem cells – from there it is only a small step to put the term "cancer" in front of it and to exclaim "healing".

Engelbrecht: Other critics remain open until there is more evidence.
Miklos: As long as cancer stem cells are not defined in a clinically meaningful way, I don’t see any chance for this concept. Also, it must be shown that patients getting substances against cancer stem cells live longer and have a higher quality of life – but this has not happened. The "groundbreaking successes" achieved through studies on mice are light years away from what happens in the clinic.

Engelbrecht: You say that tumor growth and metastasis can be explained by the heterogeneity of cancer cells, which has nothing to do with cancer stem cells. Is there evidence for this?
Miklos: The evidence is striking and based on patient data. In regards to this, it has been shown that the single cells that leave the primary tumor are aneuploid in very different ways; that is to say their chromosomes and some genes are degenerate. And the degeneration of cancer cells not only varies from person to person, but also within a single tumor. This also makes it very unlikely that a specific drug against cancer can be developed.

Engelbrecht: But science is looking sedulously for such a cure.
Miklos: Cancer scientists follow trains of thought that are highly inefficient. The reason is that they were not trained to think outside the box – in areas that call into question the clinical significance of their results. Thus, a gap has emerged between biomedical researchers and overworked clinicians – brilliantly described in the recently published *Science* article "Crossing the Valley of Death".

Engelbrecht: What should then be done against cancer?
Miklos: Early detection and removal of even of the smallest accessible cancers would be essential. Furthermore, it is important to avoid carcinogenic substances such as tobacco smoke. Nutrition also plays a role. And last but not least, patients should seriously question whether the drugs which are advertised so effectively really help to improve their quality of life and to prolong their lives. For example, first-rate data documents that the cancer drugs Herceptin and Avastin are de facto ineffective for the vast majority of patients.