

Out-licensing opportunity (BioT-0448) Prophylactic Vaccine against Malignant Melanoma

Inventors from the Department of Virology at the Georg-August-University Göttingen designed a method for a prophylactic vaccination against malignant melanoma. Probably cancers of bladder, breast, esophagus and kidney, sarcomas, leukemia and lymphomas are also prevented.

Hallmarks

- **Risk of developing cutaneous malignant melanoma might be reduced by 90% with current Yellow Fever Vaccine!**
- Proven by epidemiological analysis of **80.000 subjects**.
- Based on existing vaccines, e.g. **Yellow Fever vaccine** or Japanese encephalitis B vaccine.
- Alternatively DNA based or synthetic vaccines could also be realized.
- Yellow Fever Vaccine has **long lasting protection**.
- Yellow Fever Vaccine has excellent **safety record**.
- **Yellow Fever Vaccine is easy** and cheap to manufacture.
- Yellow Fever vaccination of Rhesus monkeys was shown to induce immune reactions against melanoma cells.

Background

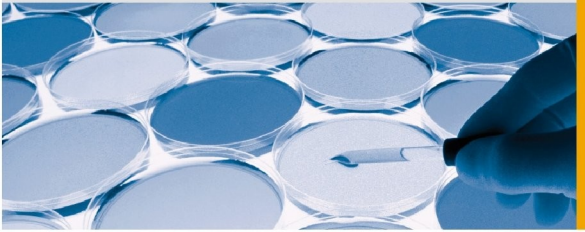
In white populations incidence rate is between 5 and 50 new cases per 100.000 per year. Malignant melanoma is the most rapidly increasing cancer in white populations with a doubling of rates every 10 years. Of every 75 Americans born in 2000, one will develop malignant melanoma in their lifetime. In the case of thin melanomas surgical excision may offer a curative approach. However, for later stages or high-risk patients no adjuvant therapy of proven efficacy exists.

On the basis that yellow fever vaccine is used to vaccinate the white population in Europe, the USA and Australia we roughly estimate a **market potential of over 800 million €/p.a.** (~ US\$ 960 million/p.a.) within the next 20 years.

Our findings are based on epidemiological analysis of relation between vaccinations and melanoma occurrence, identifying an antigen. Studies are based on yellow fever, vaccinia (smallpox) and BCG (tuberculosis) vaccines.

Further readings:

Eur. J. Cancer 2005, 41, 118, Kölmel *et al.*; Eur. J. Cancer 2005, 41, 12, Grange *et al.*, Eur. J. Cancer, 2005, 41, 104, Krone *et al.*; Kristensen *et al.* 2000; Bonanni 1999; Krone *et al.* 2003; Pfahlberg *et al.* 2002.



We have found that the two vaccines as well as >70 human pathogenic micro-organisms comprise polypeptides having significant homologies to a target antigen on melanoma cells, on their presumed precursors, the congenital and dysplastic naevi cells, as well as on several other cancer cells.

We further identified existing vaccines, which comprise polypeptides with homology to the target antigen, e.g. yellow fever vaccine.

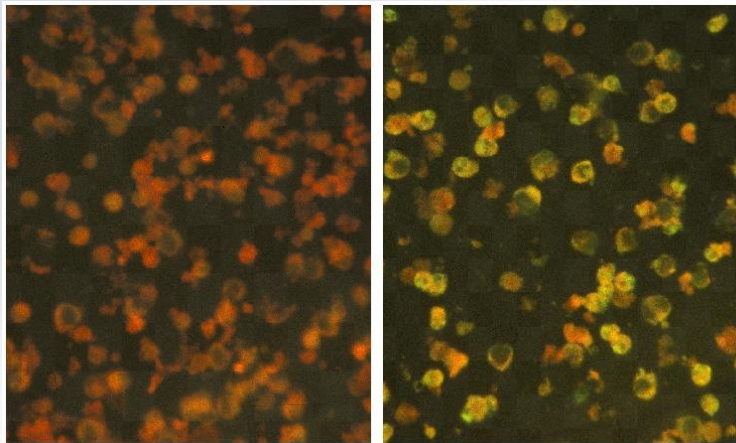


Figure: Indirect immunofluorescence test with melanoma cells Wörl of a Rhesus monkey serum 1:20 diluted four weeks after vaccination against yellow fever (right). Bound IgG is shown as green-fluorescent, cells are counterstained in red. No fluorescence was detected with the pre-vaccination serum (left).

We were able to provoke an immune response in Rhesus monkeys against melanoma cells after vaccination against yellow fever (see Figure).

Melanoma incidence increases drastically in Europe and North America. In addition to the known change in sun exposure habits the discontinuation of vaccinia and BCG vaccinations is of great importance. **The market for Melanome is estimated at US\$ 1.4 and rising.** In addition broad implications in related areas underline the potential of this invention.

We filed a patent application (WO05099750) covering this vaccination method and are now looking for companies, which are interested in in-licensing and commercializing our approach.