early experiments indicate it can — livestock might prove to be inexpensive, high-yield malaria vaccine factories.

"A vaccine must not only be effective, it must be cheap to manufacture if it is to be used in those countries hit hardest by malaria," says lead author Anthony Stowers, a malaria researcher at the National Institute of Allergy and Infectious Diseases (NIAID) in the USA. "Using transgenic animals to achieve both ends is an exciting possibility. If it works, a herd of several goats could conceivably produce enough vaccine for all of Africa."

Transgenic animals are so named because they contain a gene, called a transgene, from another individual or organism. For years transgenic animals, particularly mice, have been used to help scientists understand how genes work and interact with one another. More recently, researchers have introduced genes encoding specific proteins into animals to produce large quantities of those proteins for medical use.

However, it should be noticed that this publication is merely on a vaccine delivery technology, because an effective malaria vaccine is still lacking.

Reference:
A.W. Stowers et al. A recombinant vaccine expressed in milk of transgenic mice protects Aotus monkeys from lethal challenge with Plasmodium falciparum. Proceedings of the National Academy of Sciences Early Edition online (December 17, 2001).

...and further:

Eiselen Seminar Room at Chang Mai University

On 25 January 2002, **Her Royal Highness Crown Princess Maha Chakri Sirindhorn** awarded **Dr. Hermann Eiselen**, Chairman of the Board of Trustees of the Eiselen-Foundation Ulm, a token of appreciation in acknowledgement of his generous support to the Faculty of Agriculture, Chiang Mai University.

The ceremony was held on the occasion of the opening of the National Agricultural Fair 2002 in Chiang Mai. The Uplands Program was present at this fair with a booth displaying posters and documents on current research activities. Prior to the opening ceremony, Dr. Hermann Eiselen officially inaugurated the new "Eiselen Seminar Room" at the Faculty of Agriculture which has been dedicated by the Eiselen-Foundation Ulm for fruitful scientific exchange between Chiang Mai University, University of Hohenheim and its partners.

from left to right: Assistant Prof. Dr. Pittaya Sruamsiri, Dean of the Faculty of Agriculture, Chiang Mai University, Dr Hermann Eiselen, Mrs. Eiselen, and Prof. Dr. Benchaphun Ekasingh, Head of Department of Agricultural Economics of the Faculty of Agriculture, Chiang Mai University, at the inauguration of the Eiselen Seminar Room

New Master of Science Programme: ENVIROFOOD

Ten additional international Study Programmes will be financed by the BMBF (Bundesministerium für Bildung und Forschung). One of the selected Programmes is the Master of Science Programme "Environmental Protection and Food Production" (ENVIROFOOD) at the University of Hohenheim. This will be the second international oriented Master of Science Program in Hohenheim. Project leader of ENVIROFOOD is Prof. Dr. T. Streck of the Institute for Soil Science.

Kiribati - Prospects for aquaculture in the central Pacific

The Institute for Animal Production in the Tropics and Subtropics, section Animal Nutrition and Aquaculture, executes several research projects in Asia. One of the institutes collaborators, **Christian Lückstädt**, was invited by the Kiribati Ministry of Natural Resources Management - Fisheries Division to conduct short term experiments.

Kiribati, a group of 33 coral atolls in the Pacific Ocean, straddling the equator over more than 3,200 km, and about one-half of the way from Hawaii to Australia, became an independent country in 1979. The geographical area of Kiribati exceeds the area of the USA. However, the land area, including Gilbert, Phoenix and Line islands coffer only 886 km^2. This is

smaller than the isle of Rügen, Germany's largest island. The majority of the 94,000 people of the Republic of Kiribati, lives on the main atoll South Tarawa, where the capital Bairiki is located. Due to the high population density on this atoll, nearly 1,400 people per km^2 against only 90 people per km^2 on the other islands, they have nutritional adequacy problems. Fishery and extensive poultry and pig production make up the dominant sources of high quality protein for human nutrition.

South Tarawa with some fish ponds (photo: C. Lückstädt)

To sustain the rich fishing grounds in the lagoon and on the reef-front, which are mainly fished for snapper (Lutjanidae), sea-bass (Serranidae), tuna (Scombridae) and squid (*Octopus* sp.), as well as to overcome the nutritional problems, the government initiated aquaculture projects and fish farms. Due to topographical and geological reasons (less than 2 metre land altitude and only coral sediments), all the wells of the islands are brackish (3-5 ‰ salinity). Therefore the mostly small backyard fish farms are stocked with salt-water tolerant species as tilapia (*Oreochromis niloticus*) and milkfish (*Chanos chanos*). Milkfish is particularly well adopted as it can tolerate a salinity range from 0 to 120 ‰. Another advantage of the milkfish is that it can feed on a wide range of plankton and benthic organisms. In the coastal waters of Kiribati the yearly catch of milkfish reaches 320 t. Even caught juvenile sea-fish are kept in the ponds till they are marketed.

The water exchange in the fish ponds is by tidal flushing and renews in this way the phyto- and zooplankton stock. No supplementary feed is applied as it would be too expensive. However the ponds are fertilised with pig and chicken manure to enhance the growth of natural feed. Nevertheless, the growth of the cultured milkfish is slow and the productivity of the fish farms is small. On the other hand, the cultured fish makes much better prices then the caught fish; cultured milkfish is sold at 4 AU \$ kg^{-1} against 1 AU \$ kg^{-1} for rock-cod.

Part of a canal used for the tidal flushing of the fish ponds ((photo: C. Lückstädt)

This difference is probably due the limited supply of the cultured fish.In recent years, pearl-mussel (*Pinctada* sp.) and sea-cucumber (Holothurioida) production projects have been introduced with financial aid from the Japanese and the Australian government. However, these cultures focus export markets in Australia and Asia whereas the milkfish produced in the fish farms is marketed locally. Total milkfish production is around 50 t (1997) and is concentrated on South Tarawa and Christmas Island. The yearly growth of aquaculture production in Kiribati has been nearly 20% over the last 15 years, which is higher than the world average of about 11%. Aquaculture therefore could play an important role in supplying the human population of the central Pacific islands with high quality protein and can furthermore help to protect the fishing grounds around these islands by decreasing the fishing pressure.

Further information: Christian Lückstädt and Takaeang Reiti – Investigations on the feeding behavior of juvenile milkfish (Chanos chanos Forsskål) in brackishwater lagoons on South Tarawa, Kiribati. Verhandlungen der Gesellschaft für Ichthyologie, Band 3, 2002 (in press)

"Imprint"

Redaction:	Management Unit TROZ University of Hohenheim (790) Garbenstrasse 13 70599 Stuttgart
Telephone:	0711/459-3201
Fax:	0711/459-3315
E-Mail:	troznews@uni-hohenheim.de
Web:	http://www.uni-hohenheim.de/troznews/index.html
V.i.s.d.P.:	Redaction advisory board: Prof. Dr. W. Bessei (470) (Chairman), Dr. P. Rosenkranz (730), Dr. C. Hülsebusch (790)
Ed. & Layout:	Dr. Eric Tielkes (790)
Copies:	300