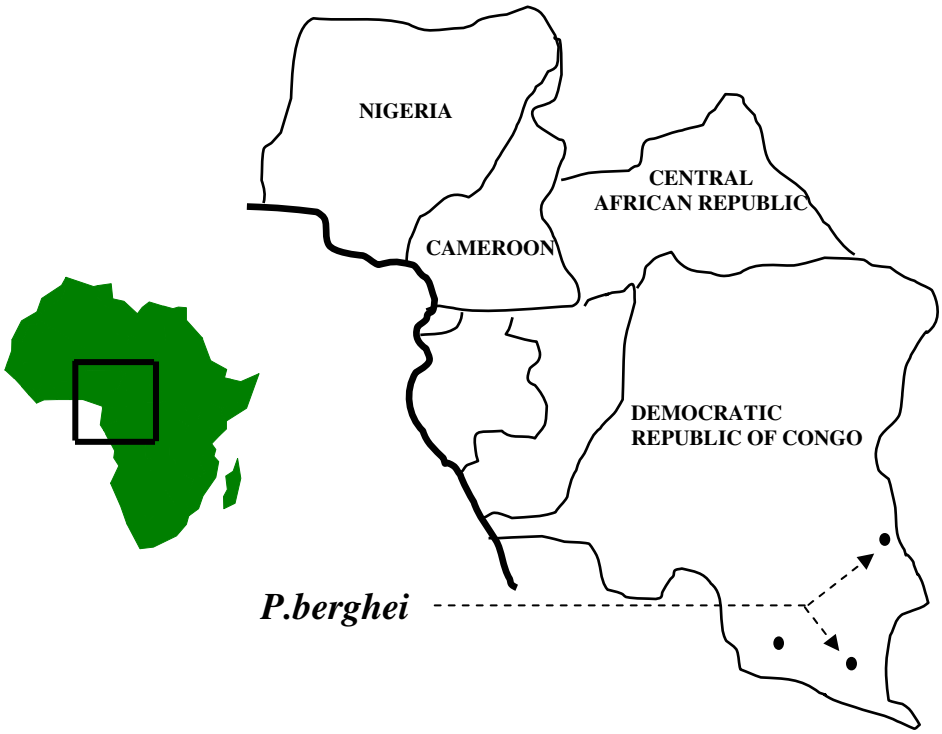
Plasmodium berghei

Life-histories and stabilates (deep-frozen samples) of isolates, lines and clones maintained at the University of Edinburgh

Page

Plasmodium berghei: origins of isolates



Isolates, lines and clones

An isolate is a sample of parasites collected from a wild-caught animal on a unique occasion. An isolate may contain more than species of parasite, and more than one genetically distinct clone of a given species.

A line refers to parasites which have undergone a particular passage or treatment. Parasites in a line usually have certain characteristics in common, but are not necessarily genetically identical.

A clone is an infection derived in the laboratory from a single haploid parasite, usually an asexual blood form, or sometimes a sporozoite.

Mixed species infections

Note that the majority of wild-caught rodents have been found to contain mixed infections of more than one species. It must be assumed, therefore, that uncloned isolates may contain such mixtures, even after prolonged passage through laboratory animals.

Also, note that *Plasmodium chabaudi* and *P. vinckei* do not normally infect intact laboratory rats (although they can be adapted to this host by passage through splenectomised rats). Uncloned isolates which have been passaged through laboratory rats, therefore, can be assumed to contain only *P. yoelii* or *P. berghei*.

P. berghei **isolates and clones**

Isolates	**Clones**
ANKA	ANKA1, ANKA5
K173 (N) → RC	
KSP11 → RLL	
LUKA	
NK65	
SP11	

Important note : There is strong evidence that all these parasites, except RC and RLL, are genetically identical, since they have identical sequences for their *ama1*, *msp1* and *dhfr* genes.

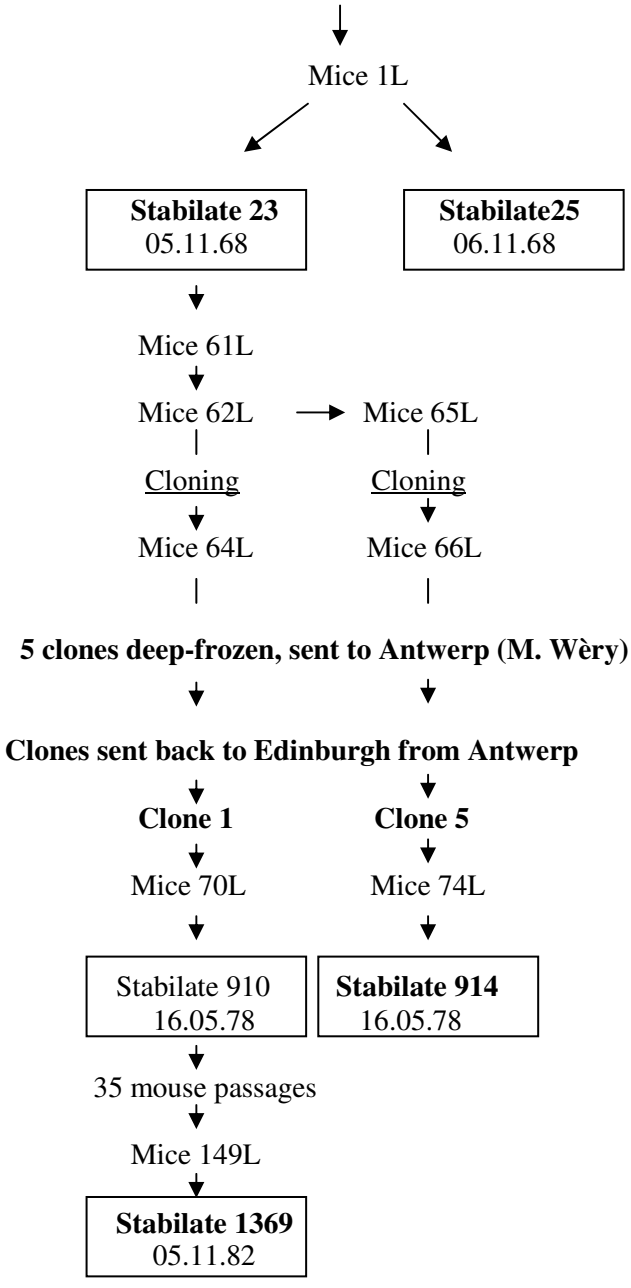
See Saul, A., Prescott, N., Smith, F., Cheng, Q. and Walliker, D. (1997) Evidence of cross-contamination among laboratory lines of *Plasmodium berghei*. *Molecular and Biochemical Parasitology* **84**, 143 - 147

P. berghei (Democratic Republic of Congo)

Isolate ANKA

Isolated from ***Anopheles dureni millecampsi***,
caught in forest gallery, River Kasapa, near Lubumbashi, by Vincke and Bafort, 07.03.65
See Killick-Kendrick, R. (1974) *Parasitology* 69, 225-237

Ampoules 1571, 1572 obtained from London SHTM.



P. berghei (Democratic Republic of Congo)

Isolate K173 (origin of N strain)

Isolated from *Grammomys surdaster* caught in forest gallery River Kisanga,
near Lubumbashi.by Vincke and Lips (1948).
See Killick-Kendrick, R. (1974) *Parasitology* 69, 225-237

(i) **K173** - mice obtained from Dr Clara Frontali, Rome, arrived 02.08.83

↓

Stabilate 1388
13.08.83

(ii) **N strain** (original 'Mill Hill' strain), taken from Mill Hill to Liverpool by D. Warhurst.
Progenitor of chloroquine-resistant RC strain

Mice received from W. Peters, Liverpool, 03.10.73, numbered 1DQ

↓

Stabilate 429
04.10.73

P. berghei (Democratic Republic of Congo)

RC strain

Derived from 'N' strain by chloroquine selection
- see Peters, W. (1965) *Experimental Parasitology* 17, 80-89.
See isolate K173 for details of original isolate.

Mice sent by W. Peters from Liverpool, 20.10.70,
numbered 1RC

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Mice 2RC

↓

Stabilate 149
05.11.70

↓

11 mouse passages

↓

Mice 22RC

↓

Stabilate 197
11.06.71

P. berghei (Democratic Republic of Congo)

Isolate KSP11

Isolated from ***Anopheles dureni millecampsi***,
caught in Katanga, 04.11.61. Received in New York University 17.11.61
See Yoeli, M. amd Most, H. (1965) *Am. J. Trop. Med. Hyg*. 14, 700 - 714,
and Killick-Kendrick, R. (1974) *Parasitology* 69, 225-237

Mice sent by Dr Rosa Vasquez, NIMR, Mill Hill, 20.02.78.

Line SPB6	Line PB19
Mice 1EO	Mice 2EO
↓	↓
Stabilate 874 24 02.78	**Stabilate 875** 24.02.78

P. berghei (Democratic Republic of Congo)

Isolate LUKA

Isolated from ***Anopheles dureni millecampsi***,
caught in forest gallery, River Kasapa, near Lubumbashi, by Vincke and Bafort, 15.03.66
See Killick-Kendrick, R. (1974) *Parasitology* 69, 225-237

Mouse no. 6739 sent by Dr J. Bafort, Liverpool, 02.10.71

↓

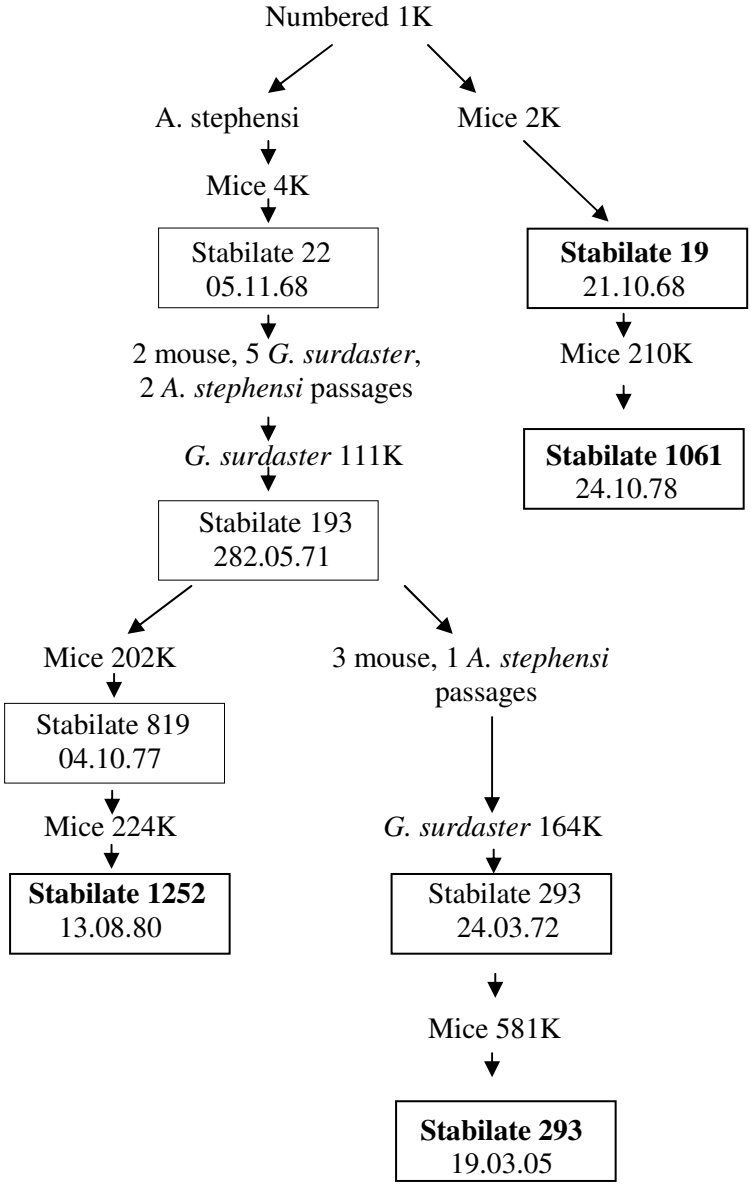
Stabilate 201
05.10.71

P. berghei (Democratic Republic of Congo)

Isolate NK65

Isolated from ***Anopheles dureni millecampsi***,
caught in forest gallery, River Kisanga, near Lubumbashi, January, 1964, taken to New York, 04.01.64,
used to infect *G. surdaster*. Then passaged through *A. quadrimaculatus* and hamsters.
See Yoeli, M. *et al*. (1964) *Science* 144, 1580-1581, and Killick-Kendrick, R. (1974) *Parasitology* 69, 225-237

Mice infected with NK65 obtained from Liverpool, arrived 15.10.68.



P. berghei (Democratic Republic of Congo)

Isolate SP11

Isolated from ***Anopheles dureni millecampsi***,
caught in forest gallery, River Kasapa, near Lubumbashi, February, 1961
See Killick-Kendrick, R. (1974) *Parasitology* 69, 225-237
Progenitor of pyrimethamine-resistant line RLL

Ampoules obtained from R. Killick-Kendrick, Imperial College, 25.10.71.

↓

Mice 2DH

↓

Stabilate 226
03.11.71

P. berghei (Democratic Republic of Congo)

Line RLL

Pyrimethamine-resistant line of isolate SP11
See SP11 for isolation details

Ampoules (1575, 1576) frozen since 06.09.68 obtained from London School of Hygiene and Tropical Medicine.

↓

Mice 1M

↓

Stabilates 26, 27
07.11.68

References

These references represent a small selection of papers, books, etc. concerning some of the *P. berghei* isolates, lines and clones included in this file.

1. Overall summaries:

Killick-Kendrick, R. and Peters, W. eds (1978) *Rodent Malaria*. Academic Press, 1978

Killick-Kendrick, R. (1974) Parasitic protozoa of the blood of rodents: a revision of *Plasmodium berghei*. *Parasitology* 69, 225-237.

2. Original isolation of strain K173

Vincke, I.H. and Lips, M. (1948) Un nouveau plasmodium d'un rongeur sauvage du Congo: *Plasmodium berghei* n.sp. *Annales de la Société Belge de Médecine Tropicale* 28, 97-104.

3. Other isolations

SP11: Michiels, G. (1963) Observations sur la gamétogenèse du *Plasmodium berghei*. *Annales de la Société Belge de Médecine Tropicale* 43, 67-82.

KSP11: Yoeli, M. and Most, H. (1965) Studies on sporozoite-induced infections of rodent malaria. I. The pre-erythrocytic tissue stage of *Plasmodium berghei*. *American Journal of Tropical Medicine and Hygiene* 14, 700-714.

NK65: Yoeli, M., Most, H. and Boné, G. (1964) *Plasmodium berghei*: cyclical transmissions by experimentally infected *Anopheles quadrimaculatus*. *Science* 144, 1580-1581

ANKA, LUKA: Vincke, I. and Bafort, J. (1968) Méthodes de standardisation de l'inoculum de sporozoites de Plasmodium berghei. *Annales de la Société Belge de Médecine Tropicale* 48, 181-194.