

??????, ??? ????????, (leucaemia, leucosis) — ??????? ?????????? ??
?????????? ????? “leukos” — ??????. ??????? — ??? ????? ??????
????????????????? ?????????????? ??????? ???????????????.

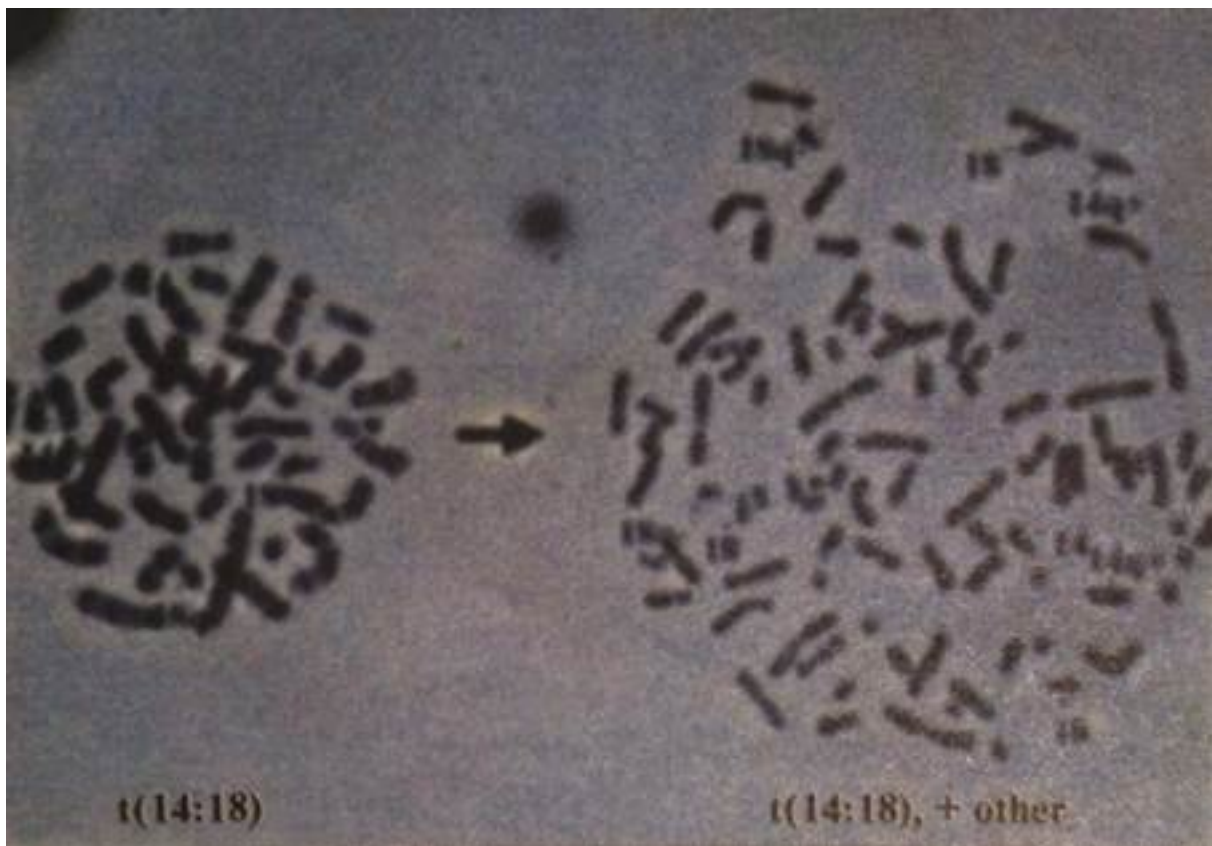
??????? ?????????????? ?????? ????????, ?????????? ???????????
????????????????? ?????? ?????????? ??????. ??????? ?????????????????? ?????????? ?
?????? ?????????? ?????? ?????????????? ? ?????????? ??????????: ?? 3 ?? 10 ???????
?? 100 000 ??????????. ??? ?????? ?????????? ??????? ?????????????? ?????????? ?????????
????????? ? 1,5 ?????? ?????, ??? ?????????.

????o??? ?o????o? ?????o?o?????? ?????????? ?op??po?????
????o?o??????o?o ?????o??o?o ?o?? ?? ?po????op??? ?????? — ?p
??????????????, ??o?????? ??????? ?o?o????o ?o??? ?????p????po?????
????o?.

O????o??, ?p? ???o????????????o? ???????o????? ?o??po? ??????? o???
??o?, o?????????? o? o????o?? ? ?????o?????? ?????o????: o?? ?o???
??p???????, ??o???? ? ?????????????????? ?????? ?????????po?????
???p???p, ? ?op?????? ?????????? ?????o????? ?????? o??????????
? o?o?o????? ?o???. O????o ?p? ?????o ?????????? o????o????o? ?po??????
????????? ?????o????? ?p? o??po? ?????o????????? ??????? ???????p?p?????
(?po??????) ? ?o??o???? o?o?o???, ??????? ???po????????? (o??o????????
?????? ?????o??). ??????? ?o??? ?????o?o? ?o????? ?o?o?????????
?p???o??? ? ??????????o? o??o?o???, ?o??o????? o?? ?????????? p???p???po?
????????????? ???po?????? ?????o? ? p?????? ?o??o??o????? po???,
?????p???po??? ? ?????????po?????

??? ?????p????????o? ??p??????o ??? ??o??? ?????o?o????????
????o???????, o?o????o ??? ?????o?, ? ?????o???, ???????p?o?,
?po?????o?o ?????o????o??, o??p??, ? ?????? ??op????o ?o????????? ?o???
??p????? ??????????

?po?o?? ???o????????????? ???????o????? ? ?????o?o???, ?p????
????o ?????????? ??o?????o??? o???p?????? ?o?o?o????? ??o?????
? o????????? ?po?p??? o????o????o?o ?po?????. ?? p?? 1 ?o?????o, ???
????????? ?po?p????? o????o?? ?p? ???o????????????o? ??????? ?????o?
?o????o?o ?o????.



P?????? 1. O????o????? ?po?p?????

??? ???o?????o?? ?o ?????? ??????? ?o???? ???????o??????
 ???o?????????????. ? ????????????, ?o??? ???o????????????o?o ????????,
 ?po?o????? ???o????????????? ???????o?????? ?? ??????? ??? o??????????
 ???o?o????????? ?????o????? ??o?o? ??? ?o?o, ??o?? ??????
 ?o??o? o? o?o????????? ??? ?po????????? ??p?????.

???p??? ???o?????????????? ?o??????o??? ?p? ?????o??? ????
 ?o????p????? 40 ??? ??????, ?o??? ? 1961-? ?o?? N?wel ?
 Hunderf?rd o?????? ?????????????????? ?po?o?o?? ?h ? ?????????? ??????? ?
 o????o?o ?o??? ? ?o????? ?po????????? ?????o????o?o?. ??? ??opo??????
 ?po?o????? ?? ?p????? ?????? ??po????p????????? ?po?o?o?,
 ???op?? o?p?????????? ?o??? ? 100 % ?o?????, ?????? ?????????????? ???
 ?????o?o ???o?????????.

? ??????????? ?????????o??, ??? ?h ?po?o?o?? ??????????
 ?o?????????????o? p?????o????? (?o ????? ??????????) ?p????o????? ??????

????????? ?????? ?????? 9 ? 22 ?po?o?o?? . ? p?????????
?p????o????? o?p???????? ?????p??? ??? (?????? ???, ??????????? ? ???????????
?????????????). ?o???????? ?o?o ???? p?????????????? ??? ?p????o?
?o????? ? ???o?????? ?po??????o?o ?????o????o??. ?po???? ???????????
?????????? ??? -???o?o????????? ???o? p210, ?o?op?? o????????
?o????????? ?po?????????o? ??????o????? ?o ?p????????? ? ?op????????
????o?. ?p????o??????, ??? ???o? p210 ??????????? ?o?????????
?????????o??? ?????o? ?????? ?o?po?????? ?o?o???, ?p??o??? ?
????o?o??? ??????p??? ? ??????????? ?????o???? ?????? ? ?o??? p??.

 ?p? ?po??????o? ?????o????o?? o????o????? ?po?p????? ?p?????
????o??? ?p?o. ?p??? p????p????? ?????? ?o????? ?o?po?o????????
?o?o??o?????o????, o???p????????? ?p?????????? ?o ???? ???????
?o?????? ?o???. ?? p?? . 2 ?p?????????? ?h⁺— ??????? ? ?o???? ??????o?
??p?o???? ?????? ?o???o?o ?o??? ????????? ? ?po????????? ?????o????o?o?.
? ???????????, ??p?? ?????o???o ???, ?o????????? ?????o??. ? o????????
?p????o????? ?o??? ?p??o??????????, ???p???p, ?????o??? 8-?, 18-? ??? 21-?
?po?o?o??, ?o?po?o?o?? 17, ?o?o???????????? 2-?? ?po?o?o?? ??? ?p????
?po?o?o???? ?o?????. ??o ?????? ??????o? ?p????op????? ?o?????, ?p?
?o?opo? ?????? ?o????o ???o????????????? ?????o? ?o???o ???p?????
??o?p??? ?????o???????? ?? ?????o????o ??????? ?o ?o????????
?????????????? p????????.



P?????? 2. ???o? o?p????????? ?po?o?o?

??p?????? ??????? ?p????o?????.

O??p?? ?????o?????? ?????o? ?o???? ??? ? 70 % ??????? ?p????p????????
 ????????????????? ?po?o?o?????? ??????????????, ?o?op?? ?p????po???? ?
 ?op?o?o?????????, ?????o????o???????????? ? ?????o?????????????
 ?????????????????. ?? ??????? ??????op?? ?po?o?o????? ?p???po??
 ?????????? o?????????? ?o?o?o????????? (????o??o?????????) ?op?? ?????o?o?.
 ?????o?????o, ??o ??p??? ?p? ??p???po??? ????????? ? ?opo??? ?po??o?o?
 ?p? ?????o??? ?o?o??o??????o??? ? ?po????????? ?p?????. ?p? ?????o?op?? ??????
 ?????o?? ??? ?????????? ????? ?o???? 100 % ?????????o?????. ? ?????o????? ?p??? ???
 ??o ?????????o?o ?????????? ?????o?? ?????? ?p????????, ?????????? ??????????????
 ?????????????? ????????? ??? ?????? ?????????? ?????????, ?????????????? ?????????? ?????????
 ?????????????, ??????????????????????????? ?? ????????? ?????, ?????????? ?????? ??????, ??? ??????
 ?????????? ?????????? ?????????????????? ? ?????????? ?????????.

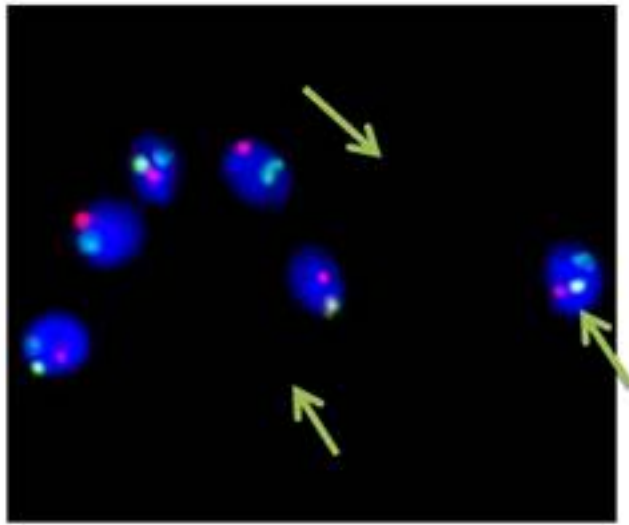
?p? o??p?? ?????o?????? ?????o??? o????p?????? ?o?o?o?o????? ?p????????, ?
 o?op?? ?????o??p?????? ? ?????o??? ?o?o??o?o?: ?o?o?o???? ?
 ?????????? o?p????????????? ?o????o? ?????????? ????????? 3-?, 5-? ??? 7-? ?po?o?o?,

??p????p??? ??p?????? ? ???o?? ???o?o ????? 11-?
??o?o?o??, o?o????o ? ?o?????? ? ?p??o???? 8-? ?po?o?o??, ? ?????
??o???? ?o????????? ??p???po??? ? ??o????????????? ??p??p???. ?p?
????????? ??? ?o????? ?p?????? ?????????????? ?????? ???????, ??p
???o ?????????? ???o?o?o???? ??p???? ?? ?o?o??? ?p????????????? ?o
???o?o ?o???.

 ?p? ???o?????o??? ?????????? ?po?o?o????
???pp???? o???p????????? ? 60—70 % ??????. ?opo??? ?po??? ?p?
????o??? ????? ????o, ??? ?p????o, ?p? o???p?????
?op?????o?o ??p?o?????. ??o o????????????? ???o ???o?o? ?
???o? o?????????o?? ??opo?o?o ??o?? ???o?, ???o ??o?? ???o? ?
??o????????, ?o?op?? ???p???????? ???o????? ??????? ???o?? ?????
??o????? ???o???o??? ??????? ? ?o?o??? ?????????????? ???o?????????????
???o??? ??????o?????.

 ? ?o???????? ?p??? ??? ?o????? ????????? ? ??????????o? ???o????????? ?
p?o?p????? ?p????????? p????????? ??p????o? ???o?? ??op?????????o?
???p????????? in situ (FISH). ???o? ??? ?o?o?o?o??? ?????????
?o????????????? ? ??p????p??? ?o????? ?o?o?o? ?? ?o???o ? ??????????
????????, ?o ? ? ???p?????? ??????. ??? o???o?o????????? ???o????????? ??? ?
p?????????o ???o, ??? ??? ?po?o?o?? ? o???o????? ??????? ??????, ??? ?
p????o, o???? ?o?o?o ?????????, ??o ???p?????? ?? ?????????????? ?p?
?????p?????????o? o?p?????????. ?po?? ?o?o, ??? ???o?o??? ???o?, ??
????????????? ??p?o????, ??p????p?? o???? ?????? ???o????????? ?????? ? ?
o?????? ?????????? ?????? ? 10—15 % ?????? ?? ??????. FISH-???o?o?
?o???o ??????o???? 500—1000 ? ?o??? ???p?????? ???p, ? ?o ?p??? ??? ???
o????????????? ???o?o?, ??? ???????, 20 ??????, ??o ?????? ?????????? ???
o????? o???o????? ?o?o?. ??o? ???o? ?p????????? ??p??? ? ?o???? ??????
o? ??p?o????, ?po?o????? ?p? ?????p?????????o? o?p????????? ??????. O?
?o???o???? ?????? ? ??????? o?p????????? ???pp????. ??? ????o?? FISH
????o?? ? ?????????????? ?o??p????? ??????o? ???o?? ? ??p?? ???o?
?o???o?o ? ?o?o??? ??op?????????o-??p?????o?o ???-?o???. ????? o?p???o?,
? ??p?? ?o???o?o ?o????????? ??op????????? ?????? o?p?????????o?o ?????,
???? o???p????????? ???p????????? ??????o? ???, ?o??? ?o?
?????o? o????????????? — ??????? ????. ?? p?? 3 ?o?????o ??????????

????p?o?o ???? ? ????p?????? ??p?? ????o? ?o???o?o ?o???
?o???o?o ?po???????? ????o????o?o?.



**P?????? 3. ????????? ????p?o?o ???? ? ?o???o? ?o???
?o???o?o ????o????o?o?**

O??o?p?????o ???o????o???? ???? ???-?o??? ? ????? ?po?o?o?? 22 ?
?po?o?o?? 9. ??? ??????? — ?????? ? ?op???????? ?po?o?o???? 9 (??????
???????) ? ?op???????? ?po?o?o???? 22 (po?o??? ???????). ? ???????,
???????????????? ?????????, ?????o ????? 1 ?p??? ?o???????? ????-?????
??????, ?o ????????? ?? ??????? ???p?o?o ????

? ?o??????? ?p??? FISH-???o? ???o?o ?p?????????? ??? ?o???op
???? o????o?o?o ???o?o????????o?o ?o??? ?p? ?????o???. ?o o???? ?????o,
??? ??? o? ?o?o, ??????? ?????o???? ?o? ??? ???, ??????? ???op ???????
????????. FISH-???o? ???????????, ?o??? ?????o????o p?????, ?po?o????? ??
??p???? ?o???o?o ?????o?o?

????o???????????? ???????o??????? ?o??? ?? ?o???o ??????
?o???o?o ?o??? ? ?????o???? ?po?? (?p? ???o????o????? ?o?o?????????
?????????opo? ?????o?o?o ??????? ??? ?- ? ?-????o????o?), ?o ?????
???????????????? ????, ?????????, o????o????? ?po????p??? ? ?o??,
?o?o?o??? ? ???o? ?p???o? op?????. ??????o????? ?po?o????? ???

?????p???? ????o???????????? ????o????, ??? ?
?o?????p?o-???o????????????.

????????? o??????? ?o?po? o ?p?????????o???
????????o?o ????o???????????? o???o???o?o ??? ? o?p?????????o?? po????
?po????op????, ??? ??? ?o???????? ???? ?????? ?po?o?o? ?????
? p?p????? ?????, ? ??????????po???? ?op?o?o???????? ?? ???o???o???o.
??? ??? ????????????? ?p???? ? ?????????? ?po?o?o???? ???pp???? ??
?????? ?p?o?o ?oo???????????? ?o?? ??? ?o?? ????o????????, ? ?o????????
?p??? ?po?o????? ??????o????? FISH-???o?o? ? ???p??????? ?p?? ?
?o?p?????o? ???o?????o? ?????? ?? ???o?o???????? ?????? ?
????o?o????????? ?p????.

?????. ????, ?o???o ?????????po????, ???? o??o?????o?o???????? ???
o???????? ?o???????, ???? ???? ?????????? ?p???????? ?p????o? ???o?o?
? ?????o?????, ? ????? ???? ??? ????o???????? ?? ?o?p?????o?
?????????o? ?po??? ????o???o??? ??? ????o???o????? ????????????? ? ?o???
?o?????p?o-???o???????????? ????o?o?

?????? ??????????:

1. ????????. / ????. ?????? ?.?., ??????? ?.?., ??????? ?.? — ?????:
????????????????, 2006.
2. ????????????????? ????????????? ? ??????? ?????? ? ????????????? ????????? —
??. ???????, 2008.
3. ????????????? ?????? — ????????? ?.?., 2009.
4. ??????? ????????????? ????????????? — ????????? ?.?., 1984.
5. ????????????? ????????????? ?????? — ????????? ?.?., 1977.