Why Drosophila and Why Leukemia

- Our Project (Parts)
- Our Project (transgenic flies)
- Future
Negative images of Drosophila melanogaster

Survey
What is your impression of Drosophila?

97.4% Dirty
Clean
Survey
What is your impression of *Drosophila*?

- Injurious insect: 81.3%
- Beneficial insect: 18.7%
Advantages of Drosophila

- multicellular organism
- Short generation time
- Few ethical restrictions
- 70% of genes are common
Drosophila Genetic Resource Center

Insect Biomedical Research Center

One of the largest stock centers in the world.

About 27,000 lines

Distribute lines to researchers

Research vital phenomenon by using insects
Last year...

Could not achieve
New drug for leukemia

Survey
What do you want from new drug for leukemia?

- effective in preventing recurrences
- affordable price
- give instant results
- need not see a doctor regularly
- others
Why Drosophila and Why Leukemia

Our Project (Parts)

Our Project (transgenic flies)

Future
List of BioBrick parts submitted

☆BBa_K758004 GAL4

☆BBa_K758003 UAS

☆BBa_K758005 UAS-LacZ

☆BBa_K758006 UAS-EGFP
List of BioBrick parts submitted

☆BBa_K758004 GAL4
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☆BBa_K758006 UAS-EGFP
UAS hsp70 EGFP or LacZ Act5C GAL4

Drosophila cells
Act5C

GAL4

GAL4protein

UAS  UAS  UAS  hsp70-P

LacZ or EGFP

LacZ or EGFP
In the presence of Act5C-GAL4, LacZ and EGFP are expressed.
Transient expression of LacZ or EGFP in *Drosophila S2* cells

**Expression of Lac Z (BBa_K758005)**
- UAS-LacZ and Act5C-GAL4: 10.1%
- UAS-LacZ alone: 0%
- UAS-EGFP and Act5C-GAL4: 12.6%
- UAS-EGFP alone: 0.5%

**Expression of EGFP (BBa_K758006)**
- UAS-LacZ and Act5C-GAL4: 10.1%
- UAS-LacZ alone: 0%
- UAS-EGFP and Act5C-GAL4: 12.6%
- UAS-EGFP alone: 0.5%
Why Drosophila and Why Leukemia

Our Project (Parts)

Our Project (transgenic flies)

Future
UAS-TNFAIP3

- UAS
- hsp70
- P3'
- P5'
- TNFAIP3
- SV40 PolyA
- white
embryo
Drosophila genome

UAS  hsp  TNFAIP3  Hsp  white

P element
UAS  hsp  TNFAIP3  SV40  white

white protein (red pigment)
Transgenic *Drosophila* (Red eye)
Injected: 642
Hatched: 83
Red eye: 9

Transgenic flies

strain 7, strain 10, strain 13, stain 14, strain 23, strain 29, strain 56, and strain 65
GAL4-UAS targeted expression system

Various GAL4 strains

Examine effect of overexpression of TNFAIP3

KIT-Kyoto iGEM 2012 JAPAN
Why Drosophila and Why Leukemia

Our Project (Parts)

Our Project (injection)

Future
We can carry out high throughput screening by using *Drosophila* leukemia model.
Also be effective to human
A model organism for next generation iGEMers
Around the Campus

Kinkakuji-temple

Hiei mountain

Takano river
You are the most welcomed to Kyoto at anytime!!
Thank you!
Any questions?