**Why can the fire ant adapt to various environments?**

**-Effects of hybridization in invasive fire ant populations-**

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**Abstract**

The fire ant *Solenopsis invicta* in invasive ranges had significant differences than native population as follows, (1) chromosomal morphologies, (2) ploidy, (3) Ag-NOR signals, (4) 18S rDNA and telomere FISH signals. Furthermore, the molecular phylogeny revealed a high frequency of introgression. **Possible factors:** HYBRIDIZATION among other *Solenopsis* species.

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**The most harmful invasive ant, fire ant**

(1) Killed over 100 peoples in USA.
(2) Economically lost is over 5,000 million dollars in a year.
(3) Disturbe biodiversity and native ecosystems.
(4) Derived from north Argentina.
(5) Invaded in Alabama, 1939.
(6) Already invaded Australia, China, and Taiwan.

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**Possible distribution areas and sampling sites**

- 2011. 12.5 – 18 Buenos Aires, Otamendi, Iguazu, Argentina
- 2010. 2.15-20 Gainsville, Crystal River, Florida, USA
- 2009. 8.20-24 Taoyuan, Taiwan

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**Aims: Comparing cytogenetic and genetic data between invasive and native areas**

- **Karyotypes**
  - **Native (Iguazu)**: *S. xyloni* type (acrocentric)
  - **Invasive (Florida)**: *S. invicta* type (metacentric)

- **Ag-NOR signals**
  - Diversity of chromosome shapes and ploidy suggested that occurred hybridization.
  - A number of signals will occur in invading ant cells because the cytoplasm may undergo fusion and mixing through hybridization.

- **18S rDNA & Telomere**
  - Diversity of 18S rDNA FISH signals observed in invasive area.
  - Highly differences of telomere signals observed in invasive area.

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**Molecular phylogeny**

- Molecular phylogeny suggests that exists the possibility of hybridization among related species for evolutionary long time in native areas.