

Testing the AFLP Method in Order to Evaluate Genetic Diversity in a Localized Population of *Papaver alboroseum* (pale poppy)

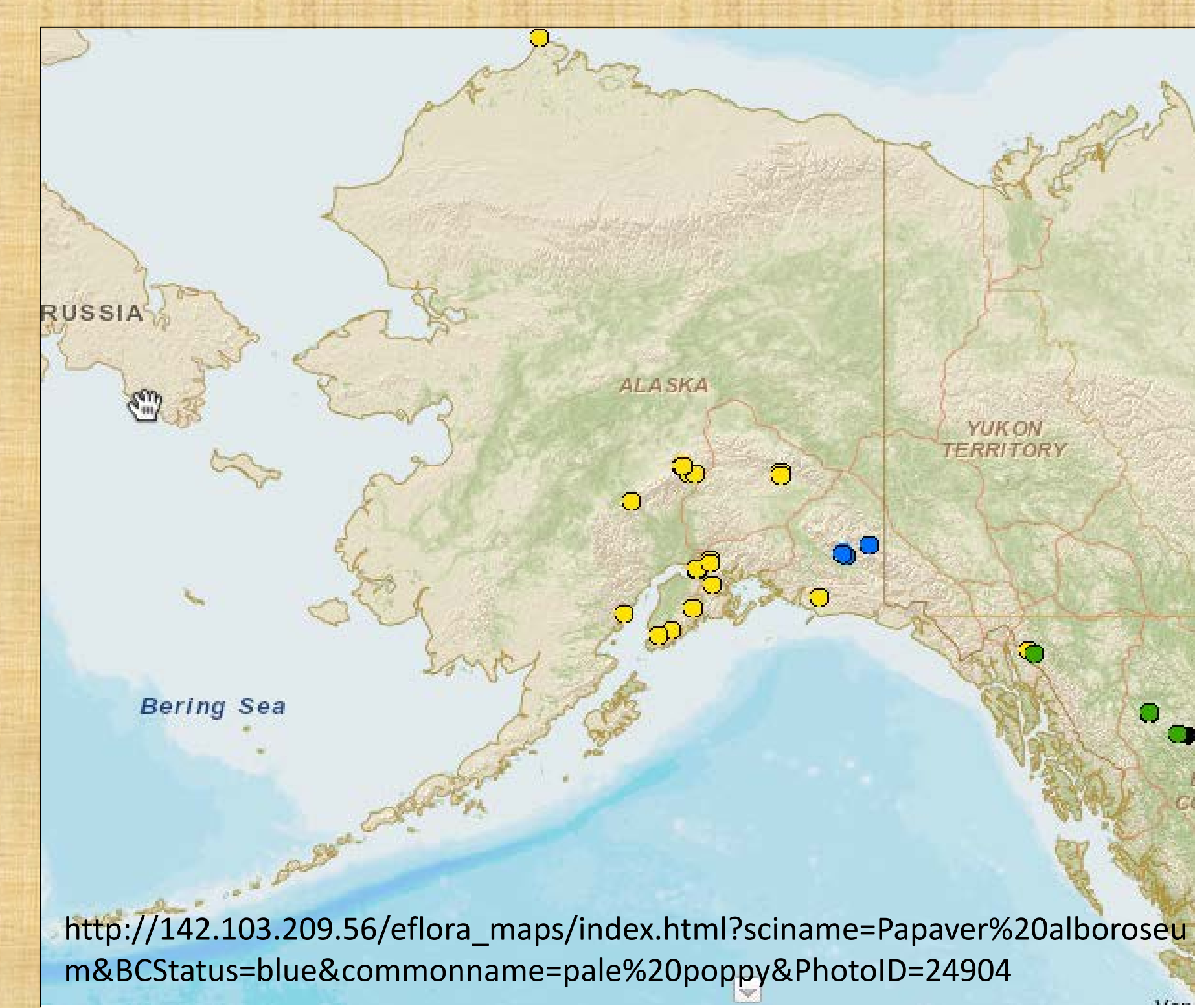
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Introduction:

This study focuses on 8 pale poppy specimens taken from Portage site B (Collet, 2005). These samples were used to test the AFLP protocol (Amplified Fragment Length Polymorphisms) (Vos, 1995). AFLPs are used to estimate genetic diversity, which is necessary to predict pale poppy response to climate change.

Methods:

In order to test the AFLP protocol, we extracted DNA from dried pale poppy leaf samples. Then we digested the DNA from the poppies using restriction enzymes EcoR1 and Mse1. We sequenced the restriction enzyme fragments after multiple rounds of PCR.



A range map showing pale poppy locations in Alaska and Canada.



Conclusions:

After testing the AFLP protocol under DNA dilutions 12.5%, 25%, and 50%, the most successful primer pairs occurred at size standard Liz 600 at 50%, and at size standard Liz 500 at 50%. In future work, these parameters should be used with DNA for maximum accuracy in estimating genetic variation using primer pairs Ecor1 -1xMse1-1, Ecor1-2xMse1-3, & Ecor1-3xMse1-5.

Results:

Figure 1:

Size Standard (SS)	Liz500	Liz600	Liz500	Liz600	Liz500	Liz600
DNA Concentration	12.5%	12.5%	25%	25%	50%	50%
EcoR1-1&Mse1-1(Blue)	5/8	4/8	6/8	6/8	7/8	7/8
EcoR1-2&Mse1-3(green)	5/8	5/8	5/8	2/8	7/8	7/8
EcoR1-3& Mse1-5(yellow)	5/8	4/8	6/8	3/8	6/8	7/8

Individualized primer pair results

Aknowledgements:

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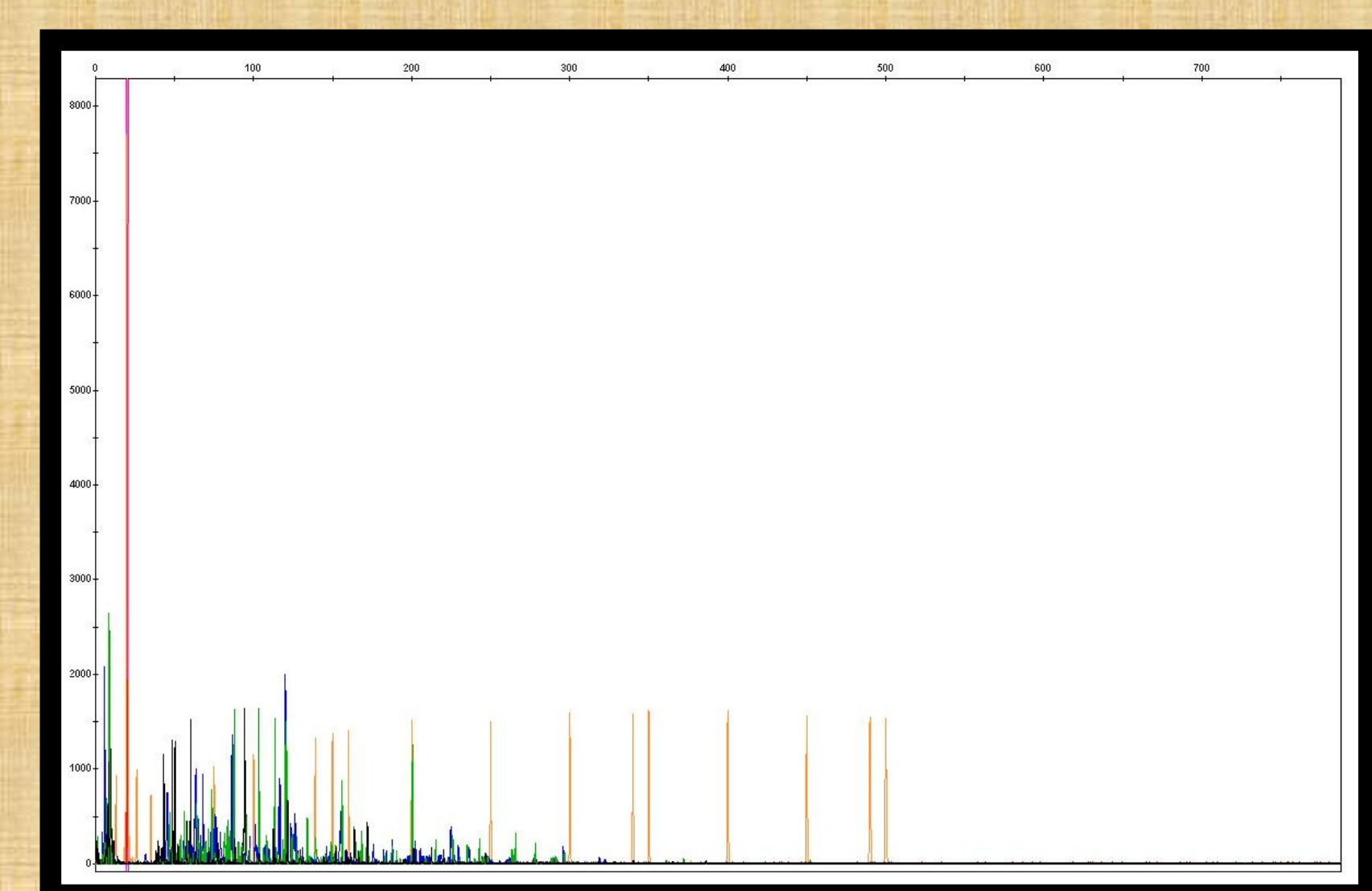
Figure 2:

Overall DNA Concentrations			
SS	12.5%	25%	50%
Liz 500	15/24	17/24	20/24
Liz 600	13/24	11/24	21/24

Results show overall primer pair success

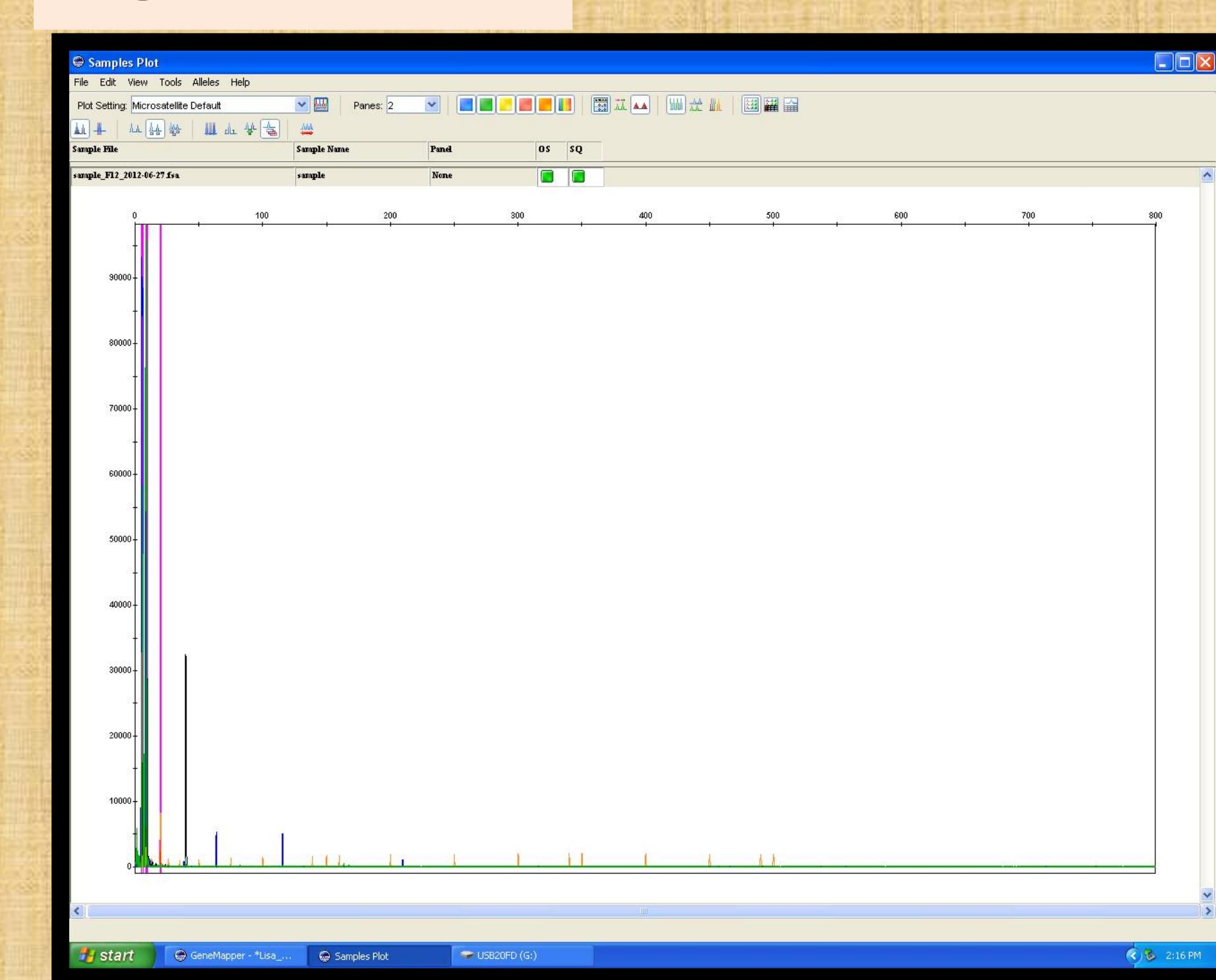


Figure 3:



Size standard Liz500, Sample 4, Success (OK), 50% DNA concentration

Figure 4:



Size standard Liz500, Sample 2, Fail (0), 50% DNA concentration

Works Cited:

--Collet, Dominique M. "A Survey of Two Sensitive Plant Taxa *Papaver alboroseum* and *Arinca lessingii* ssp. *Norbergii*, in Portage and Bear Valleys, Chugach National Forest, Alaska." USDA Forest Service. (2005): 3-18.
 --Vos, Pieter, Rene Hogers, Marjo Bleeker, Martin Reijans, Leo van de Lee, Miranda Hornes, Adrie Frijters, Jerina Pot, Johan Peleman, Martin Kuiper and Marc Zabeau. "AFLP: a new technique for DNA fingerprinting." Oxford University Press. 23.21 (1995): 4407-13.

