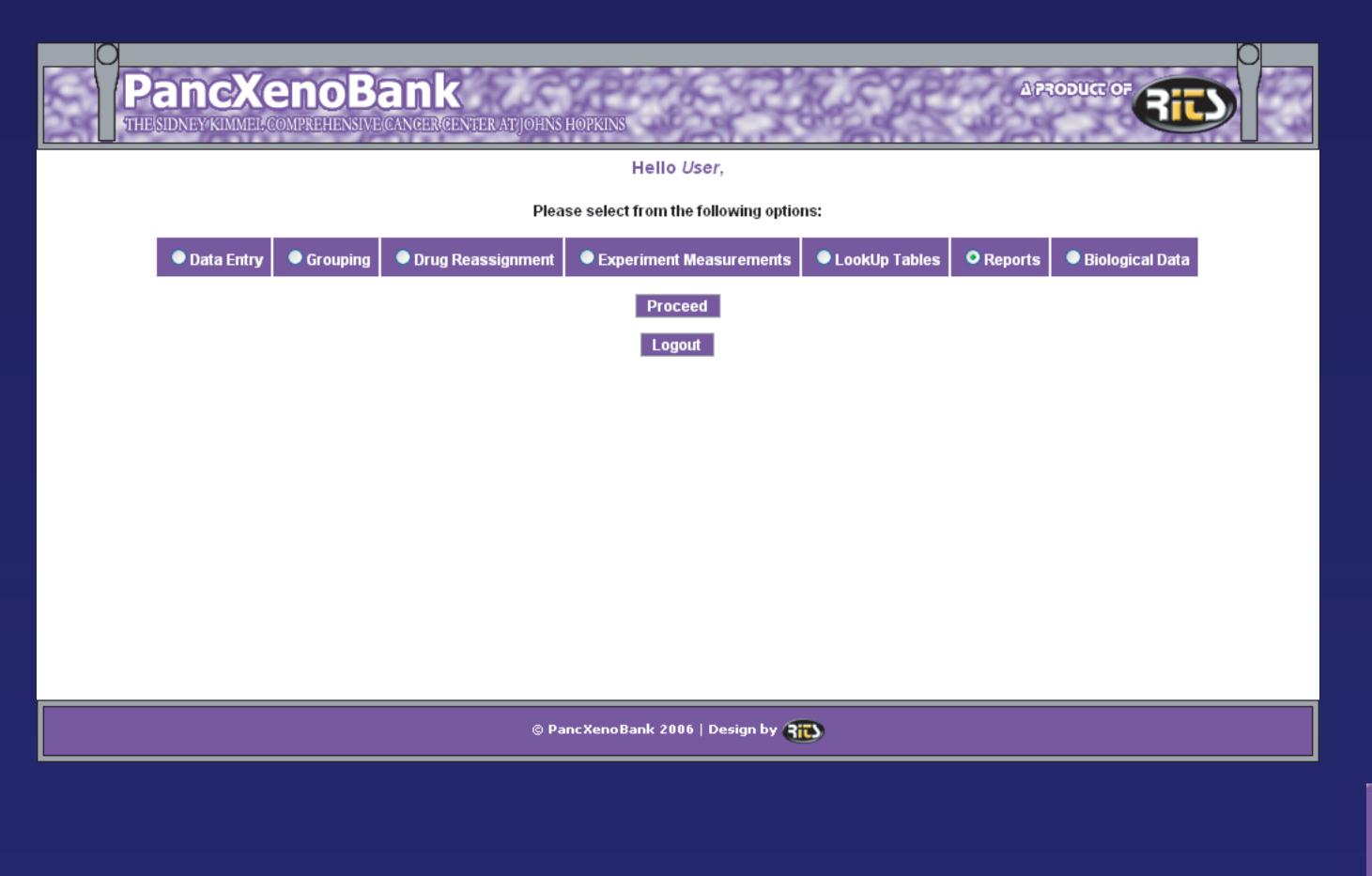
## Correlating Drug Efficacy and Microarray Analyses in Cancer Research Using Web Database Applications Research Infomation Technology Systems

### Introduction:

A web application acts as the control center in this two part translational research study. In part one, human tumors are implanted into mice and treated with a variety of drugs. In part two the same human tumor undergoes microarray testing and analysis. The application links the results of both experiments via the gene and probe set ontologies, with all experimental data maintained in this secure web-based database driven application.

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## Measurement Entry Interface (technicians use USB caliper) in Adobe Flex 2

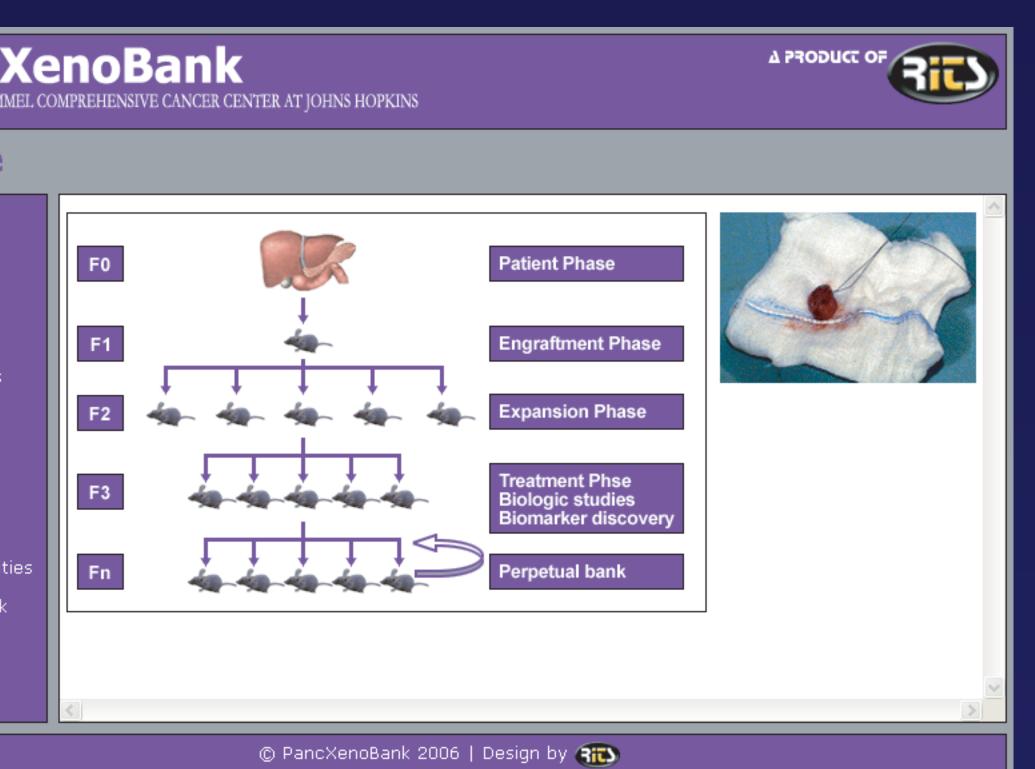
Experiment Name	Start Date	Case	Date of Implan	tation Total Imp	plants Te	echnician
JH166_080327	2008/03/27	JH166	2008/02/15	60	te	ech
PANC420_080409	2008/04/09	PANC420	2008/03/10	30	te	ech
Experiment: JH166_080327	Mouse: 781					
Cage 1: Drug1	Measurement Date	Right Short Diameter	Right Long Diameter	Left Short Diameter	Left Long Diameter	Comments
Mouse Number	2008/03/27	7.42	9.62	10.25	11.2	
093	2008/04/01	9.38	14.18	11.43	12.53	
758	2008/04/03	10.38	14.83	12.56	13.93	
769	2008/04/07	12.78	16.74	13.39	14.9	
776	2008/04/10	14.45	18.12	13.99	14.86	
781	2008/04/14	17.62	22.13	15.78	17.69	
	2008/04/17	17.07	23.06	15.7	17.75	
	2008/04/21	18.59	25.01	16.74	19.42	
-						
Cage 2: Drug2		0	0	0	0	
Cage 3: Drug3		11	19			
Cage 4: Drug4		Process	me Finished Enter	ing Measurement	Finish Experiment	

Mouse Number	Right Short Diameter	Right Long Diameter	Right Volume	Left Short Diameter	Left Long Diameter	Left Volume	Average	Comments
1	4.99	9.49	118	8.7	8.28	313	216	
10	6.1	8.83	164	0	0	0	164	
11	0	0	0	5.56	10.14	157	157	
12	0	0	0	4.86	8	94	94	
13	6.56	12.11	261	4.38	4.89	47	261	
14	6.25	11.84	231	3.26	5.66	30	231	
15	5.52	9.61	146	6.79	10.25	236	191	
16	5.84	11.59	198	6.29	10.46	207	202	
17	4.58	9.65	101	6	10.2	184	142	
18	5.14	11.42	151	6.24	8.77	171	161	
19	4.84	10.01	117	6.94	10.38	250	184	
2	5.86	14.41	247	5.99	11.91	214	231	
20	6.63	10.14	223	6.88	9.52	225	224	
21	5.15	8.5	113	3.65	5.4	36	113	
22	5.62	9.97	157	6.46	9.29	194	176	
23	4.69	7.53	83	7.12	12.19	309	196	Ĩ
24	4.97	8.11	100	6.6	9.6	209	155	

All data is stored in an Oracle database. The web interface was created using ColdFusion and Flex, which are available from and supported by Adobe, all communication with users is encrypted through the use of SSL, and the web server used is IIS from Microsoft. The application can be accessed by any authenticated user and any browser, as long as they are running the Flash Player, which is a free download from Adobe.

## JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND

https://www.rig.onc.jhmi.edu

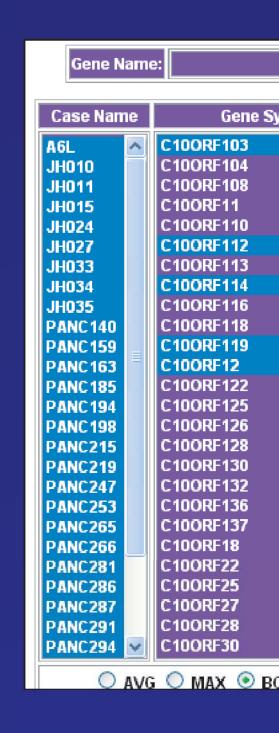




## Drug Efficacy SAS Report (in XML, XLS, Flex 2) for all Experiments and Drugs

_Drugs	P140	P159	P163	P185	P194	P198	P210	P215	P219	
Drug 1				81%						
Drug2								68%		
Drug3					70%					
Drug4			67%	52%		81%		103%		
Drug5				<b>40</b> %		73%		<b>52</b> %		
Drug6	Ĩ			81%	115%	94%		46%		
Drug7	61%		75%		42%	2%				
Drug8	6%	34%	17%		47%,45%	-23%		7%	-3%	
Drug9					22%					
Drug 10	41%	7%	32%		53%	-24%		75%	11%	
Drug 11			-12%	-20%					20%	
Drug12						79%				
Drug 13		72%	<b>84</b> %		<b>67</b> %			<b>58</b> %		
Drug 14					113%					
Drug 15		76%		<b>50</b> %	<b>66</b> %	41%		167%		
Drug 16		3%		-7%	5%	-4%,-3%,10%	-24%			
Drug17										
Drug 18	118%	81%	87%		49%	76%		75%		
Drug 19					119%					
Drug20					62%					
Drug21										
Drug22	-28%	-13%	-6%,-5%	28%	-51%	-29%,-12%,-18	10%	-39%,-19%,-8%	44%	
1 1					100			-106		,

## Optimal Distribution of Tumors



Alla Guseynova, Michael Fox, L. Allan Grimm

Relative growth

	_																							
,		Control																						
Days of		00	J6			02	26			037				040				00	J9			11		
Measurement	Rig	ght	Left		Rig	ght	Left		Rig	ght	Le	Left		ght	Left		Right		Le	≝ft	Right		Lef	
	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	
Day 1	6.23	8.59	8.85	10.03	8.17	10.27	6.62	7.76	9.97	10.78	6.01	6.40	9.60	11.87	6.19	9.35	8.98	10.83	8.47	10.30	8.18	8.65	6.27	
Day 4	6.95	8.78	9.54	10.87	9.05	10.94	7.50	8.48	10.76	11.51	6.63	7.61	10.15	12.74	6.94	10.42	9.66	12.16	8.97	11.31	8.49	9.34	7.38	
Day 8	7.57	9.43	10.36	11.73	9.77	12.27	8.16	9.10	11.43	13.32	7.71	8.59	10.74	13.34	7.85	11.86	10.47	13.36	9.68	12.53	8.81	9.85	8.07	
Day 11	7.88	9.85	11.34	13.00	10.05	13.37	9.09	9.89	12.04	14.03	8.20	9.28	11.49	13.95	9.02	12.68	11.22	14.57	10.70	13.73	9.06	9.75	8.51	
Day 15	8.56	10.78	11.67	13.73	11.04	14.82	9.66	10.13	12.64	14.56	8.34	9.98	11.57	14.43	9.75	12.93	12.42	14.71	11.29	14.16	9.12	10.35	8.67	
Day 18	9.31	11.38	12.11	14.09	11.48	16.11	10.04	10.61	13.26	14.96	9.14	10.45	11.70	15.02	10.43	13.84	12.57	15.84	11.72	14.56	9.33	10.64	8.99	
Day 22	9.95	13.02	12.37	14.55	12.02	17.17	10.26	11.11	14.05	15.52	9.72	10.61	12.22	16.70	10.94	14.60	13.54	17.08	12.37	15.17	9.52	11.31	9.30	
Day 25	10.92	14.74	12.90	15.27	13.51	19.68	11.91	12.25	14.35	16.48	10.25	11.76	12.26	17.58	12.33	15.02	13.87	18.20	12.97	15.93	9.66	11.47	9.8	
Day 29	11.72	15.22	13.23	15.74	14.72	21.28	12.48	13.49	14.87	17.25	10.88	12.19	12.80	19.13	12.63	15.82	14.08	18.75	13.78	16.19	9.79	11.87	10.1	

Days of	Control	Drug 1	Drug 2	Drug 3	Drug 4	Control	Drug 1	Drug 2	Drug 3	Drug 4	Control	Drug 1	Drug 2
Measurement													
	MEAN	MEAN	MEAN	MEAN	MEAN	STDV	STDV	STDV	STDV	STOV	STDERR	STDERR	STDERR
Day 1	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day 4	1.32	1.23	1.22	1.26	1.17	0.09	0.13	0.12	0.10	0.03	0.03	0.05	0.04
Day 8	1.75	1.54	1.49	1.68	1.14	0.26	0.26	0.26	0.15	0.08	0.09	0.09	0.09
Day 11	2.19	1.83	1.80	1.96	1.14	0.43	0.39	0.39	0.22	0.12	0.15	0.14	0.14
Day 15	2.57	2.04	2.13	2.30	1.16	0.52	0.51	0.41	0.39	0.15	0.18	0.18	0.15
Day 18	3.02	2.34	2.50	2.66	1.19	0.73	0.65	0.47	0.52	0.17	0.26	0.23	0.16
Day 22	3.51	2.79	2.99	3.08	1.29	0.85	0.88	0.52	0.64	0.18	0.30	0.31	0.18
Day 25	4.52	3.20	3.40	3.62	1.43	1.39	1.08	0.65	0.87	0.23	0.49	0.38	0.23
Day 29	5.29	3.58	4.26	4.38	1.68	1.68	1.24	0.98	1.32	0.32	0.59	0.44	0.35

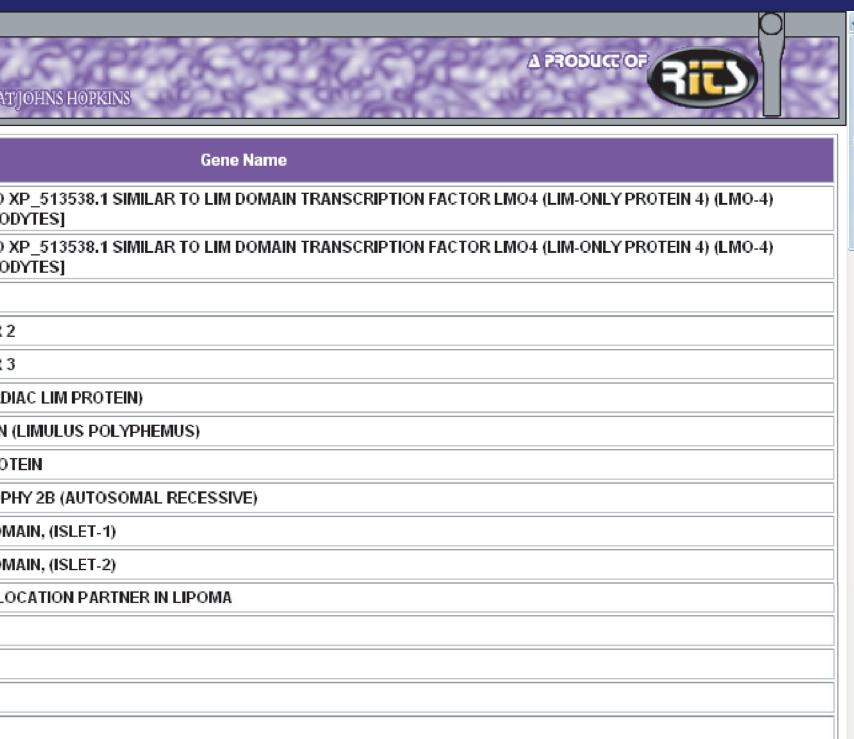
VKC1		NEWKIMMERCOMPREHENSIVE/CANGERCENTER A
	Gene Symbol	
	229537_AT	TRANSCRIBED LOCUS, STRONGLY SIMILAR TO (BREAST TUMOR AUTOANTIGEN) [PAN TROGLO
	241922_AT	TRANSCRIBED LOCUS, STRONGLY SIMILAR TO (BREAST TUMOR AUTOANTIGEN) [PAN TROGLO
	ABLIM1	ACTIN BINDING LIM PROTEIN 1
	ABLIM2	ACTIN BINDING LIM PROTEIN FAMILY, MEMBER
	ABLIM3	ACTIN BINDING LIM PROTEIN FAMILY, MEMBER
	CSRP3	CYSTEINE AND GLYCINE-RICH PROTEIN 3 (CARD
	сосн	COAGULATION FACTOR C HOMOLOG, COCHLIN
	LSAMP	LIMBIC SYSTEM-ASSOCIATED MEMBRANE PRO
	DYSF	DYSFERLIN, LIMB GIRDLE MUSCULAR DYSTROP
	ISL1	ISL1 TRANSCRIPTION FACTOR, LIM/HOMEODOM
	ISL2	ISL2 TRANSCRIPTION FACTOR, LIM/HOMEODOM
	] LPP	LIM DOMAIN CONTAINING PREFERRED TRANSLO
	] FHL1	FOUR AND A HALF LIM DOMAINS 1
	FHL2	FOUR AND A HALF LIM DOMAINS 2
	] FHL3	FOUR AND A HALF LIM DOMAINS 3
	FHL5	FOUR AND A HALF LIM DOMAINS 5
	EVC2	ELLIS VAN CREVELD SYNDROME 2 (LIMBIN)

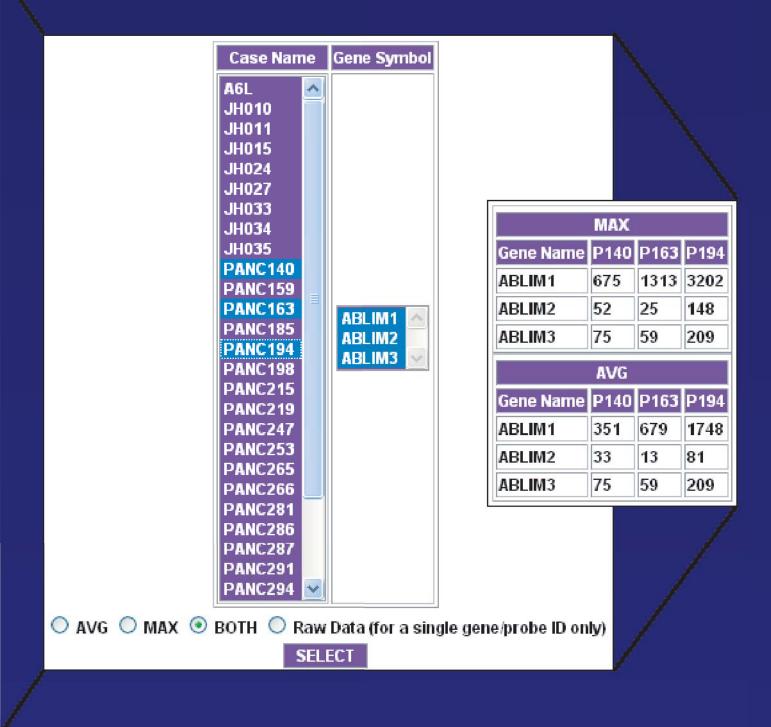
# SEARCH 1438\_at 1487\_at 1494\_f\_at 1552256\_a\_at 1552257\_a\_at 1552261\_at 1552263\_at 1552264\_a\_at 1552266\_at 1552269\_at 1552271\_at 1552272\_a\_at 1552274\_at 1552275\_s\_at 1552276\_a\_at

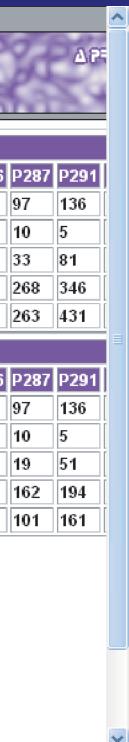
## Correlation of Affymetrix Genomic Data with Local Experiments

	MAX Name A6L JH010 JH011 JH015 JH024 JH027 JH033 JH034 JH035 P140 P159 P163 P185 P194 P198 P215 P219 P247 P253 P265 P266 P281 P28																							
Gene Name	A6L	JH010	JH011	JH015	JH024	JH027	JH033	JH034	JH035	P140	P159	P163	P 185	P194	P198	P215	P219	P247	P253	P265	P266	P281	P286	
C100RF103	153	19	98	16	13	103	60	110	16	22	22	25	61	127	37	25	136	61	33	29	129	13	24	Ş
C100RF112	21	3	12	2	4	5	13	9	6	10	9	3	2	11	8	5	6	6	6	3	2	3	4	ŀ
C100RF114	41	31	37	24	38	44	178	123	36	31	28	17	51	60	82	38	92	34	28	62	60	31	29	3
C100RF119	543	487	342	466	331	298	190	362	233	229	352	508	202	344	292	383	411	484	380	663	647	410	744	2
C100RF12	311	75	269	79	92	319	234	262	82	67	100	79	183	329	39	70	314	80	52	55	332	102	65	2
	AVG																							
Gene Name	A6L	JH010	JH011	JH015	JH024	JH027	JH033	JH034	JH035	P140	P159	P163	P 185	P194	P198	P215	P219	P247	P253	P265	P266	P281	P286	
C100RF103	153	19	98	16	13	103	60	110	16	22	22	25	61	127	37	25	136	61	33	29	129	13	24	9
C100RF112	21	3	12	2	4	5	13	9	6	10	9	3	2	11	8	5	6	6	6	3	2	3	4	ŀ
C100RF114	25	26	21	17	22	31	105	71	25	21	20	11	32	36	63	25	71	25	21	52	41	24	17	ŀ
C100RF119	260	193	204	184	134	168	105	177	101	99	152	204	121	203	121	155	229	190	150	246	298	169	291	ŀ
C100RF12	120	33	106	34	38	123	83	106	35	27	38	30	74	127	17	28	121	38	25	30	126	37	27	ŀ

### Daily SAS Experiment Analysis







### **Conclusion:**

Using the web authenticated users can run canned or ad hoc queries to tease out the casual relationships. This system is an example of a customized web application helping to better automate and integrate translational research.