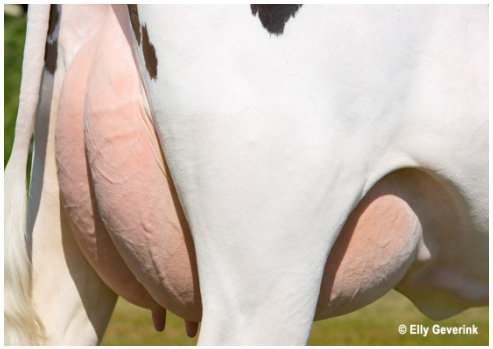
Use of EVA



Vikinggenetics group of EVA:

Kenneth Byskov, VG

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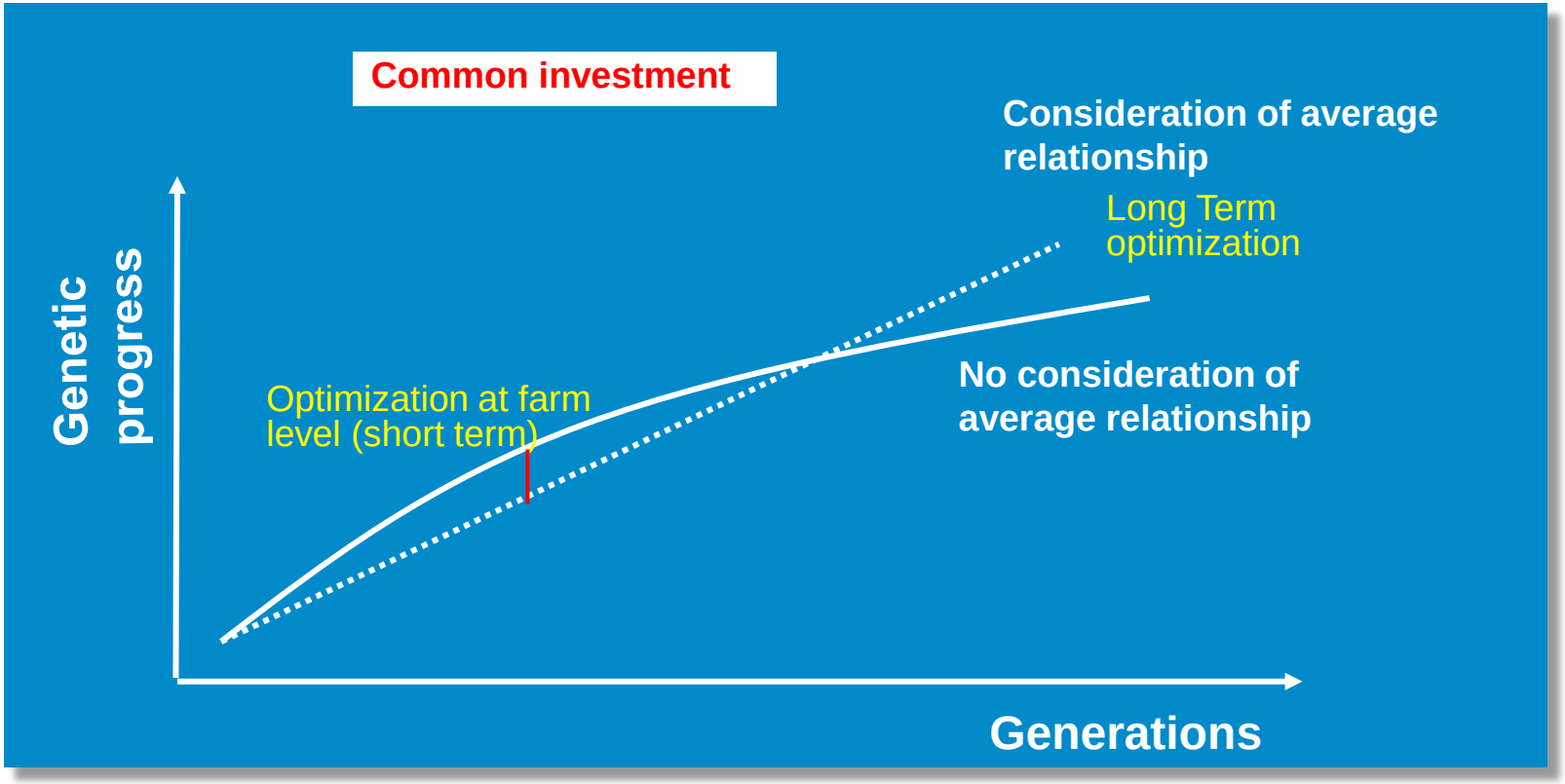
Technical Support from Nordgen (Eva program available here)

Why use of EVA

- VinkingGenetics uses EVA to optimize our bull selection, because



What does EVA do

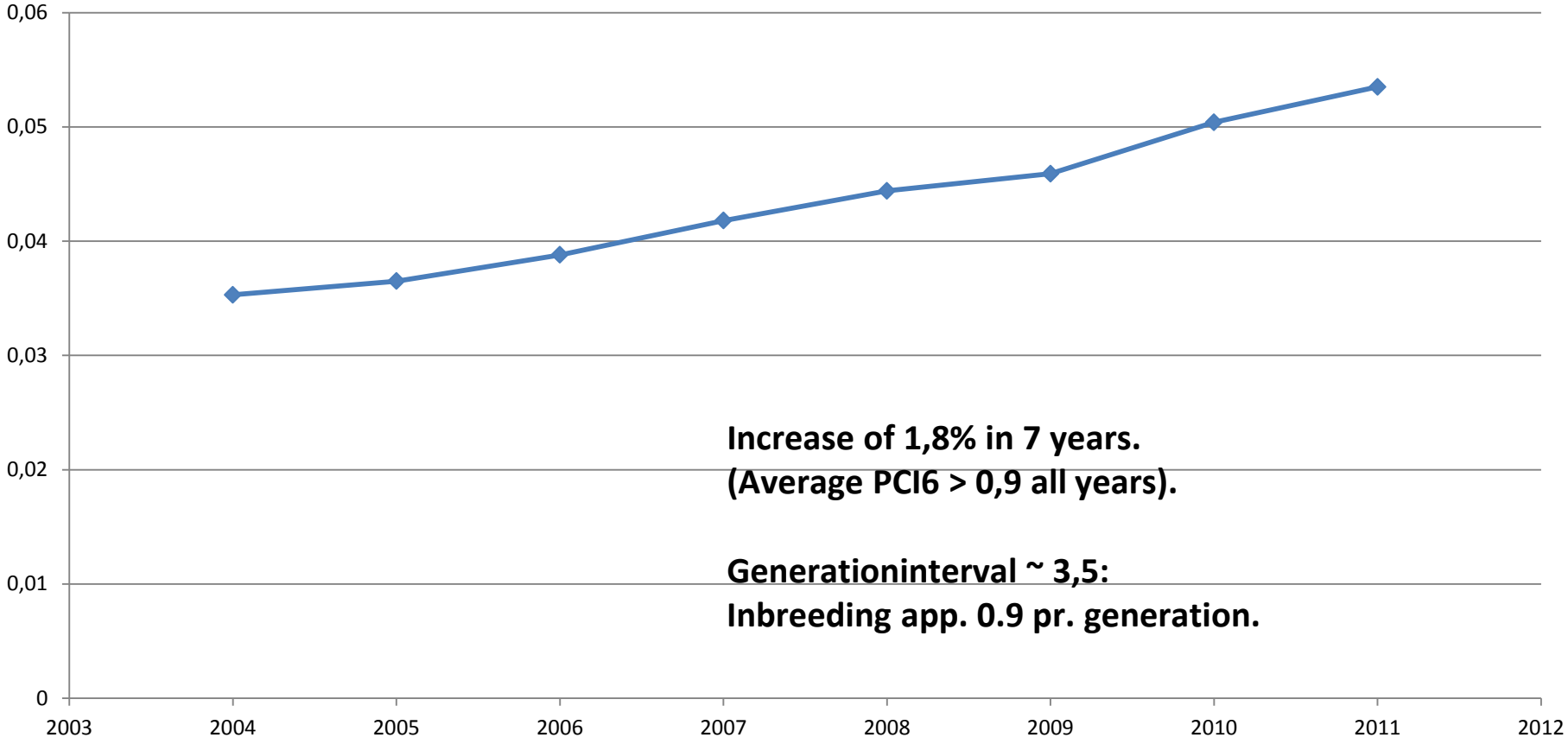
- Optimize a linear function of genetic merit and average additive relationships

S = b1 * average EBV – b2 * average relationsship

(Weights of b1 and b2 are subjective measurement)

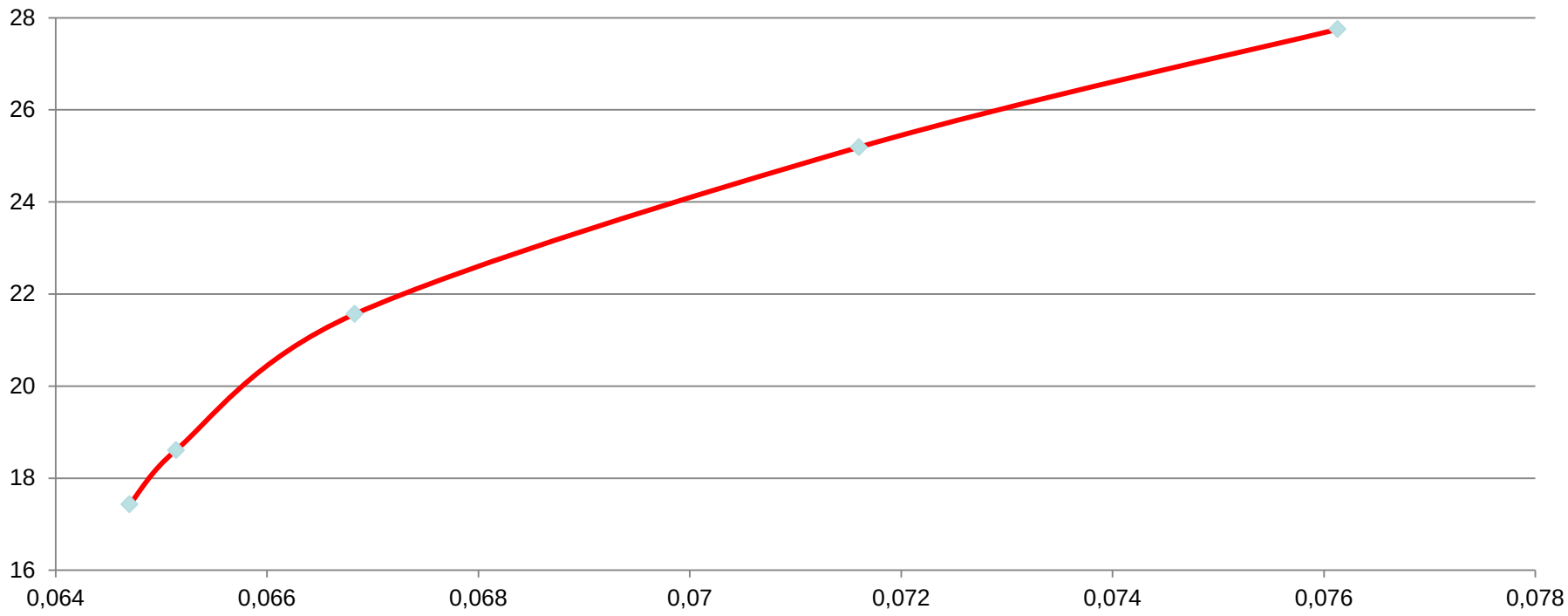
- Other results to optimize long term response
  - Contribution from old bulls to individual animals or cohortes
  - Relationship between single individual animals or single animal and cohorte
  - Average inbreeding in population, and increase in inbreeding pr. year

Ex. Inbreeding in Jersey



App. 4400 potential bulldams, 308 bulls

Selection of Sire of son Holstein.



Weight: EBV (b1) = 1

Weight: Average relationship (b2) varies:

-50, -100, -200, -400, -600

Selection of Sires of son Holstein

name	Sire	MGS	F	GEN	PCI6	50N	50S	100N	100S	200N	200S	400N	400S	NTM
VH Miracle	Massey	Roumare	0.0154	7.6508	0.6601	10	0.1706	10	0.1500	10	0.1358	3	0.0628	37
Delta G-Force	Man-O-Man	S Jordan 3	0.0163	7.6860	0.7079	10	0.1886	10	0.1681	4	0.0792			36
Maximum	Man-O-Man	Laudan	0.0151	7.7985	0.7195	10	0.1892	10	0.1707	3	0.0748			36
	Sterngold	Rakuuna	0.0229	9.4314	0.9058	10	0.1827	6	0.1298					37
	D Mason	D Sol	0.0585	9.9123	0.9490	10	0.2013	5	0.1274					39
	VH Bertel	VH Bismark	0.0400	11.1569	0.9961	10	0.1760	5	0.1073					37
	Bookem	D Mason	0.0422	10.3782	0.9565	7	0.1708							35
	Sterngold	Planet	0.0181	8.8107	0.8671	6	0.1523	5	0.1281	1	0.0682			33
VH Osmus	D Onside	V Exces	0.0552	10.1271	0.9961	5	0.1328							36
	D Jul	Oman Justi	0.0440	10.3178	0.9909	5	0.1492							37
	Observer		0.0000	6.0596	0.0000	4	0.0922	10	0.1393	10	0.1326	10	0.1269	27
	Beacon	Planet	0.0729	7.9756	0.7829	4	0.1136	7	0.1345	4	0.0945	1	0.0611	30
VH Meno	Massey	Oman Justi	0.0131	7.9103	0.6812	3	0.1379							33
	Bookem	D Basso	0.0342	10.3541	0.9651	2	0.1124							32
	VH Cup	Mascol	0.0396	10.4952	0.9639	2	0.1194							35
	Prince	Stol Joc	0.0161	7.7883	0.6662	1	0.0799	4	0.0907	4	0.0719			29
	VH Lima	Mascol	0.0292	10.1458	0.9639	1	0.0949							32
DRH Jerut	Jerudo	DRK Utzon	0.0343	6.5817	0.5530			7	0.0821	10	0.1298	9	0.1335	14
DRH Simon	Spencer	DRK Uno	0.0097	7.2944	0.7013			3	0.0440	10	0.1203	9	0.1290	14
Moonboy	Dorcy	P Shottle	0.0054	6.5868	0.5223			5	0.0955	8	0.1074	9	0.1088	24
VH Mäntylän Fibrax Fanta	Fibrax	Satsi	0.0259	7.7981	0.6793			5	0.0775	8	0.1018	8	0.1001	23
O-Cosmopolitan	Planet	P Shottle	0.0000	5.2184	0.0000			1	0.0576	8	0.1132	9	0.1160	19
DRH Julius	Jerudo	Tocar	0.0190	6.6752	0.5560					6	0.1020	9	0.1314	7
DRH Spice	Spencer	Elayo Red	0.0060	7.6471	0.7089					3	0.0756	8	0.1273	11
VH Twist	Thoiry	Roumare	0.0083	6.8259	0.6433					4	0.0681	5	0.0696	21
VH Melos	Massey	E Boliver	0.0136	7.5576	0.6663			2	0.0868	2	0.0742	2	0.0534	27
DRH Mors	DRH Malvoy	DRK Utzon	0.0084	8.4384	0.8701							6	0.0898	7
Denim	Freddie	N Wizard	0.0161	7.1428	0.6718			3	0.0790	3	0.0609			27
DRH Alvin	Arnold	B Goldwyn	0.0090	7.1212	0.7227							4	0.0738	5
	Bookem	P Shottle	0.0110	7.1891	0.5458			2	0.0916	1	0.0778			28
VH X-Ray	Xacobeo	Slättaröd	0.0290	8.2221	0.7172					1	0.0400	2	0.0486	22
DRH Bravo	DRH BASTA	Canvas RF	0.0154	8.5057	0.8709							2	0.0506	5
S Viikinki	Alves	Hairybreiz	0.0189	8.8876	0.9622							2	0.0494	18
	Prince	P Shottle	0.0144	6.3936	0.6004							1	0.0363	14
	Marion	K Lynch	0.0203	7.4758	0.7207							1	0.0344	12

Relationship indvidual bull to all bulls (Holstein)

name	dnk	swe	Sire	MGS	NTM	F	GEN	PCI6	relation to all bull
VH Oyvind	252791	90927	Oman Justi	V Exces	26	0,0436	9,3077	0,9828	0,1364
D Orange	249155	90886	Oman Justi	T Funkis	25	0,0383	8,7439	0,9803	0,1361
VH Oxford	252514		Oman Justi	V Exces	19	0,0423	9,3605	0,9765	0,135
VH Olike	252023		Oman Justi	RGK Bob CV	24	0,0411	9,2237	0,9777	0,1337
D Opman	248939	90835	Oman Justi	KOL Nixon	24	0,045	8,8613	0,9765	0,1325
D Obsess	250414	91007	Oman Justi	D Novalis	21	0,0434	8,864	0,9815	0,1301
VH Ole-O	252223		Oman Justi	Lancelot	21	0,0404	9,1497	0,9687	0,1299
			S Viikinki	Turbo	21	0,0244	10,3659	0,9909	0,0665

Contributor to Holstein 2012 bullteam

Name	Ancestor	Group	N.Group	Add.rel	Gen.cont	Text
Elevation	82177	2012	135	0.149848	0.135812	old
Arlinda Chief	82010	2012	135	0.108004	0.108004	old
Bell	17001	2012	135	0.118161	0.100689	old
Osb Ivanho	82266	2012	135	0.087812	0.086795	MGS of Elevation, SS of Bell
Oman Justi	1004606434	2012	135	0.160504	0.082870	new bull!
SWD Valiant	82097	2012	135	0.115660	0.080226	Sire Arlinda Chief
TB Elevat	82265	2012	135	0.069048	0.068249	Sire of Elevation

Future Work and Challenges

- Model the population right:

- EVA 2, possible to use G-matrix
  - Breeding decision mainly taken on GEBV → Average relationship should also be considered on genomic relationship
  - Bias because of low PCI avoided

- Make it possible to use as a daily selection tool
  - EVA 2 has helped a lot – but still some work to do

- Find hours to work with the analysis ☺