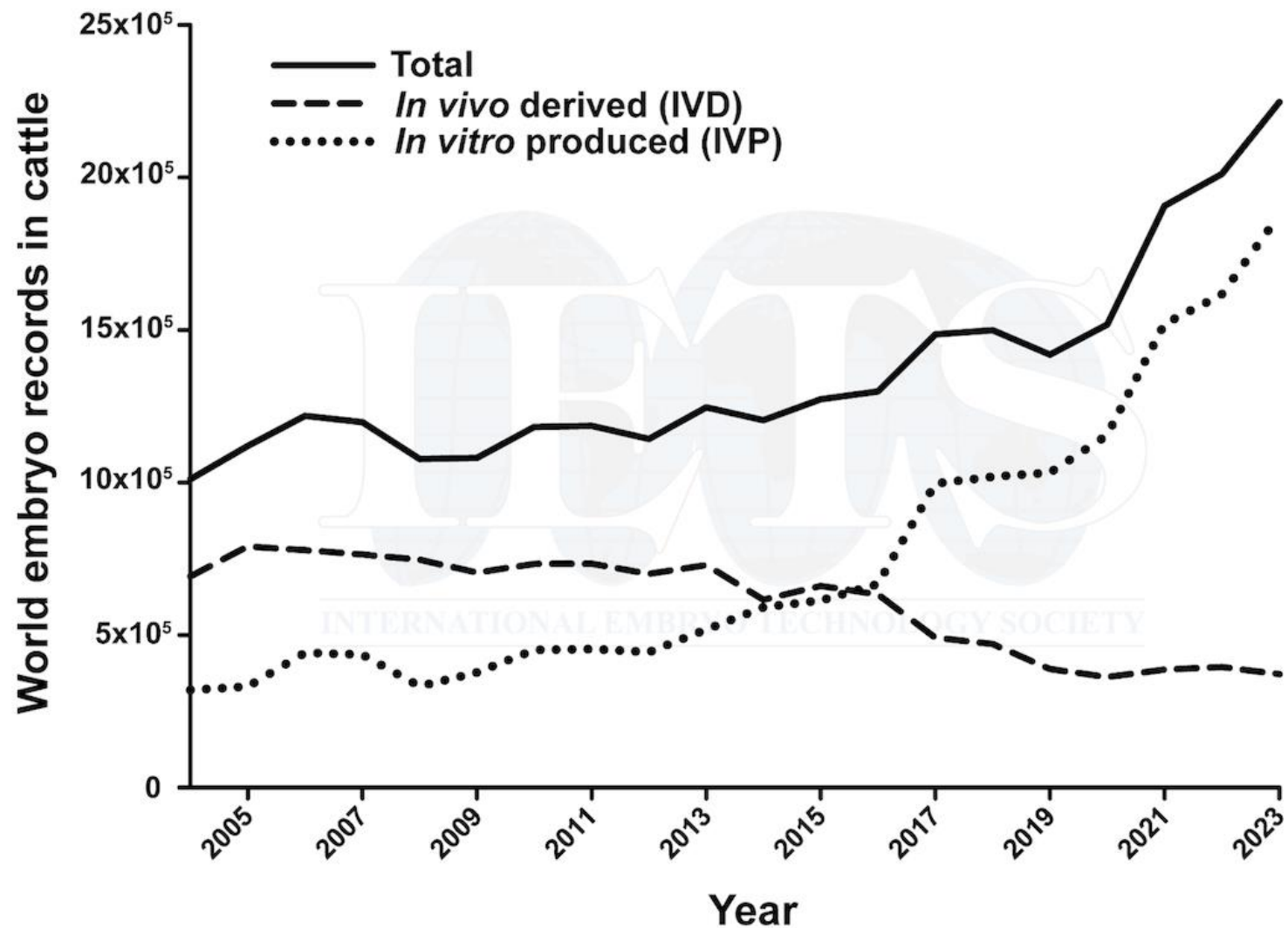


World political map showing the countries that submitted ET data (yellow) or with records about the import of embryos (blue) in 2023

Viana JHM. 2023 Statistics of embryo production and transfer in domestic farm animals: The number of *in vitro*-produced cattle embryos worldwide is now fivefold greater than that of *in vivo*-derived embryos . Embr Tech Newsl 2024; 42 (4):31-46.



Number of bovine embryos (*in vivo* derived [IVD], *in vitro* produced [IVP], and total) recorded in the period 2004-2023

Table 1. Total production (transferrable embryos) of IVD and IVP embryos in 2023 in cattle, sheep, goats, and horses, by region

Region	Cattle		Horses		Sheep		Goats	
	IVD	IVP	IVD	IVP	IVD	IVP	IVD	IVP
Africa	0	7,368	0	0	0	0	0	0
Asia	35,114	40,328	0	0	0	20,398	1,949	5,485
Europe	132,585	53,824	904	7,106	33,332	200	200	0
North America	156,768	1,093,376	672	3,033	15,417	147	12,803	3,083
Oceania	18,013	38,691	0	0	19,737	0	925	0
South America	28,658	643,004	24,127	6,230	7,598	40	16	0
Total 2023	371,138	1,876,591	25,703	16,369	76,084	20,785	15,893	8,568
Total 2022*	396,247	1,620,347	24,248	14,242	42,470	12,808	17,167	2,147
% Change	-6.3	+15.8	+6.0	+14.9	+79.1	+62.3	-7.4	+299.1

* Data updated after the last report

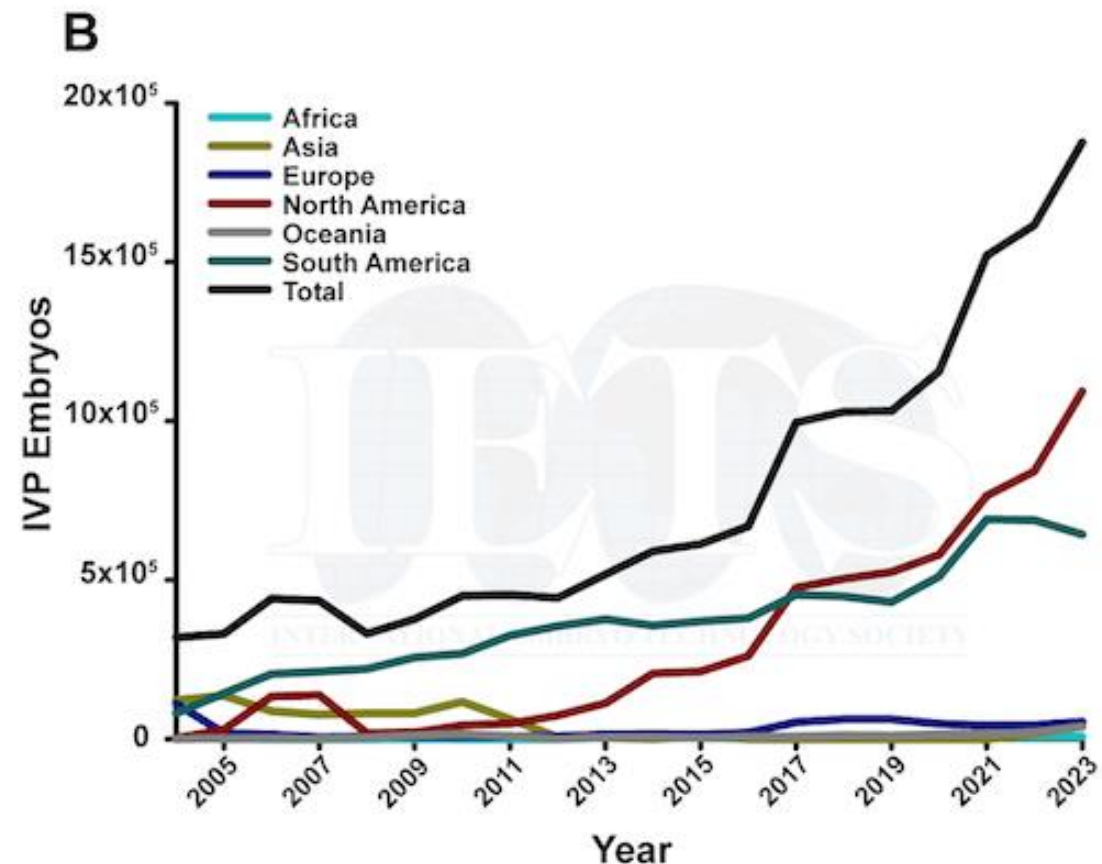
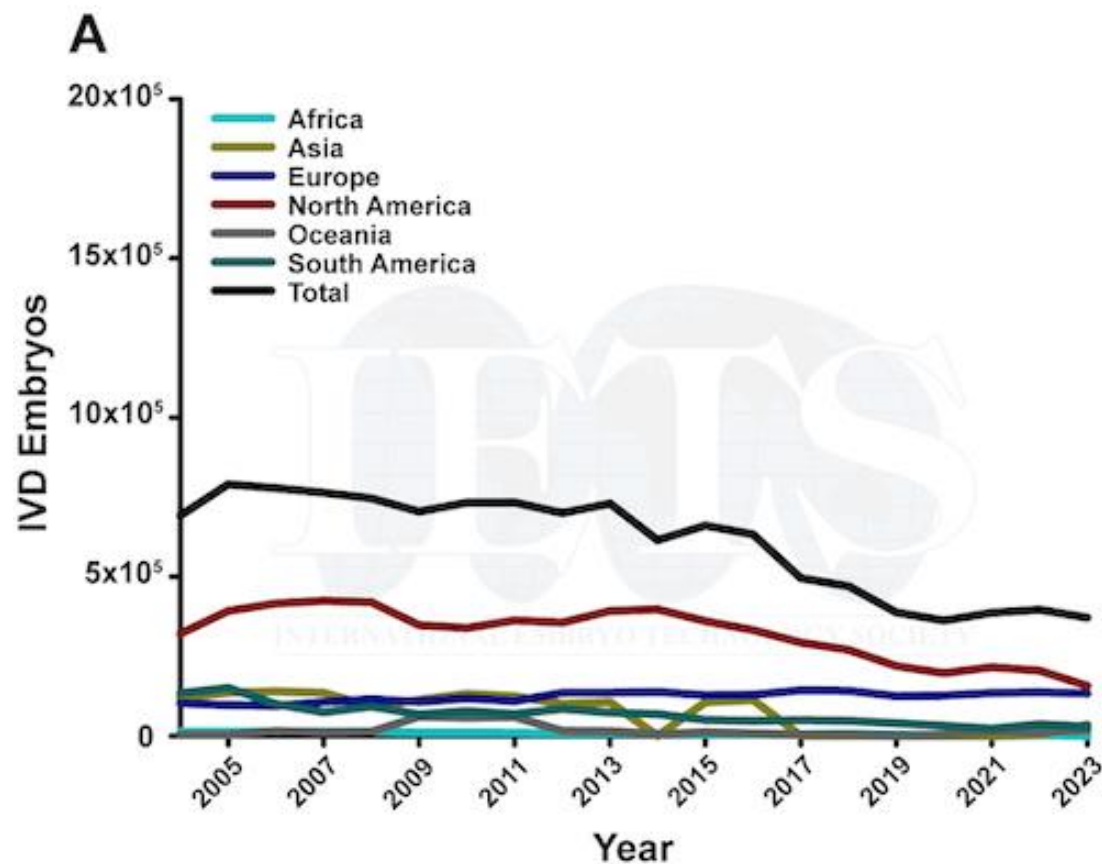
Embryo collection or production in livestock

Table 2. Transfers of IVD and IVP embryos in 2023 in cattle, sheep, goats, and horses, by region

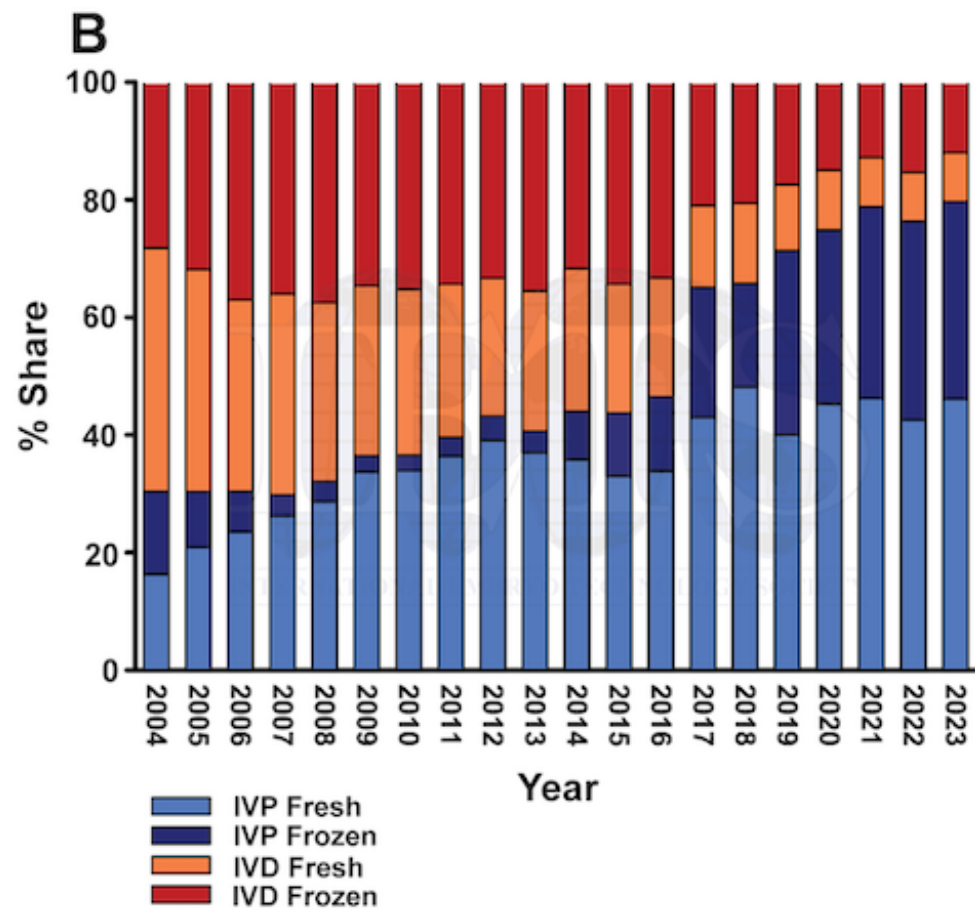
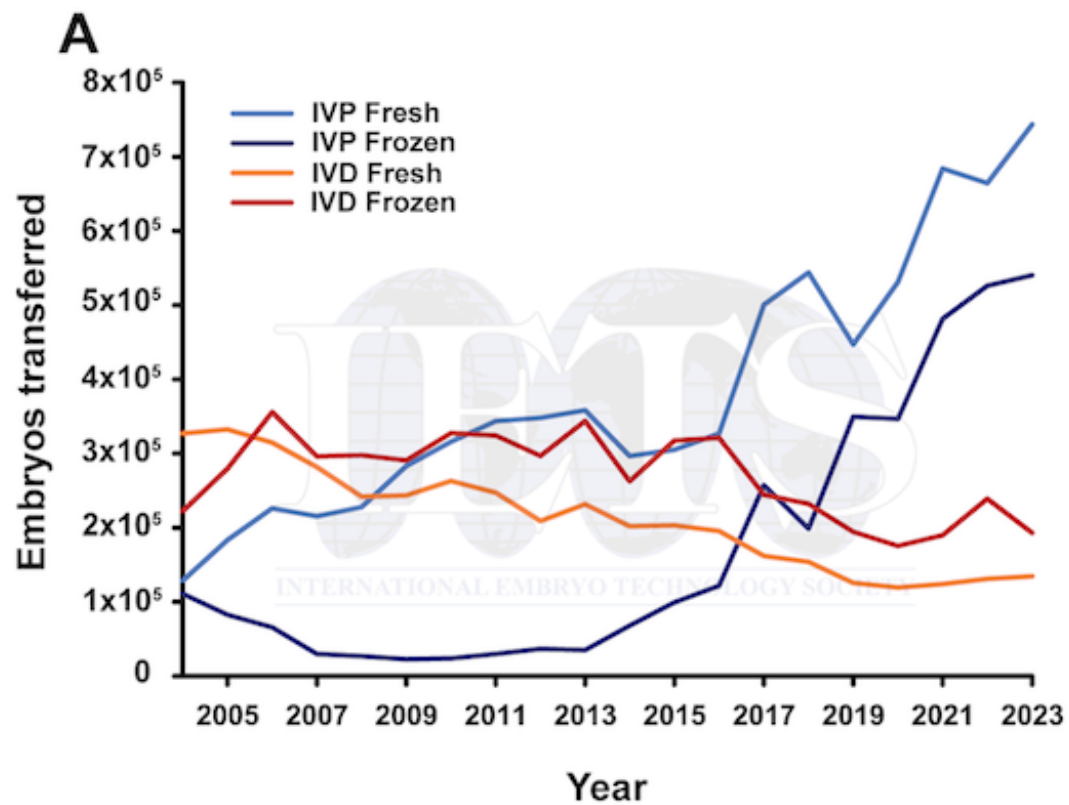
Region	Cattle		Horses		Sheep		Goats	
	IVD	IVP	IVD	IVP	IVD	IVP	IVD	IVP
Africa	0	7,343	0	0	0	0	0	0
Asia	34,345	32,287	0	0	0	5,040	1,949	0
Europe	118,164	27,144	1,077	1,013	2,242	0	0	0
North America	131,882	551,344	1,019	1,079	15,195	332	12,412	3,036
Oceania	14,105	39,149	0	0	19,109	0	877	0
South America	29,002	626,897	23,910	6,230	6,904	0	16	0
Total 2023	327,498	1,284,164	26,006	8,322	43,450	5,372	15,254	3,036
Total 2022*	369,911	1,190,900	23,019	5,977	40,787	7,239	16,486	1,748
% Change	-11.5	+7.8	+13.0	+39.2	+6.5	-25.8	-7.5	+73.7

* Data updated after the last report

Embryo transfers in livestock



Number of bovine embryos produced or collected in cattle in the period 2004-2023, by continent. A) *in vitro* produced [IVP] embryos; B) *in vivo* derived [IVD] embryos



Embryo transfers in cattle in the period 2004-2023, according to the origin of the embryo (*in vivo* derived [IVD] or *in vitro* produced [IVP]) and the technique used (fresh or frozen-thawed). A) Number of embryos transferred; B) Percentage share of the total embryo transfers per year

Table 15. Top 20 countries according to the ET intensity index in 2023. This index considers the ratio between the number of embryos recorded and the size of the cattle inventory in each country.

Country	Embryos ¹	Embryo rank	Cattle herd ²	Herd rank ³	Index ⁴	Intensity Rank
United States	1,077,707	1	92,076,600	3	117.0	1
Netherlands	36,452	10	3,751,000	63	97.2	2
Canada	86,783	4	11,515,000	30	75.4	3
Panama	7,864	17	1,508,571	98	52.1	4
Finland	4,207	23	821,970	110	51.2	5
Denmark	6,715	20	1,466,000	99	45.8	6
Austria	5,656	21	1,861,070	87	30.4	7
Germany	32,133	12	10,996,960	31	29.2	8
Italy	16,648	13	6,049,000	45	27.5	9
Switzerland	4,135	24	1,525,270	97	27.1	10
Norway	2,419	28	898,800	107	26.9	11
France	44,332	8	16,986,190	20	26.1	12
Paraguay	33,101	11	13,513,375	26	24.5	13
Mexico	85,654	5	36,338,366	8	23.6	14
Australia	53,660	7	24,398,826	14	22.0	15
Brazil	473,872	2	234,352,649	1	20.2	16
Viet Nam	11,426	15	6,339,400	44	18.0	17
Argentina	96,165	3	54,242,595	6	17.7	18
Hungary	1,516	33	894,000	108	17.0	19
Colombia	42,539	9	29,642,539	12	14.4	20

¹ Total of embryos (IVD + IVP) recorded in 2023

² According to [FaoStat 2022](#) [2]

³ According to cattle herd size, ranked from the largest to the smallest

⁴ Embryos recorded per 10,000 cattle heads

ET intensity index rank 2023

Table 10. Sheep: *in vivo*-derived (IVD) and *in vitro*-produced (IVP) embryo collections and transfers in 2023

Region/ Country	IVD Embryos					IVP embryos					
	Flushes	Embryos	Embryo transfer			Donors	Oocytes	Embryos	Embryo transfer		
			Fresh	Frozen					Fresh	Frozen	
				Domestic	Foreign						Domestic
Asia											
China	0	0	0	0	0	3,900	81,144	20,398	4,409	631	0
Total	0	0	0	0	0	3,900	81,144	20,398	4,409	631	0
Europe											
Hungary	2	8	0	0	0	0	0	0	0	0	0
Portugal	13	25	23	9	0	0	0	0	0	0	0
Romania	10	50	50	0	0	0	0	0	0	0	0
Russian Federation	140	1,745	1,065	131	0	0	0	0	0	0	0
Spain	13	55	55	121	129	0	0	0	0	0	0
Sweden	0	0	0	0	230	0	0	0	0	0	0
United Kingdom	4,104	31,449	353	76	0	40	200	200	0	0	0
Total	4,282	33,332	1,546	337	359	40	200	200	0	0	0
N America											
Canada	17	66	57	12	49	0	0	0	0	0	0
Mexico	84	458	375	83	0	0	0	0	0	0	190
United States	2,573	14,893	12,743	1,876	0	122	1,391	147	105	37	0
Total	2,674	15,417	13,175	1,971	49	122	1,391	147	105	37	190
Oceania											
Australia	2,678	19,737	16,331	2,285	493	0	0	0	0	0	0
Total	2,678	19,737	16,331	2,285	493	0	0	0	0	0	0
S America											
Argentina	66	218	152	62	0	0	0	0	0	0	0
Brazil	916	7,281	6,271	320	0	0	0	0	0	0	0
Panama	0	0	0	0	0	18	140	40	0	0	0
Peru	21	99	91	8	0	0	0	0	0	0	0
Total	1,003	7,598	6,514	390	0	18	140	40	0	0	0
Grand Total	10,637	76,084	37,566	4,983	901	4,080	82,875	20,785	4,514	668	190

Embryo collection or production and transfers in sheep

Table 11. Goats: *in vivo*-derived (IVD) and *in vitro*-produced (IVP) embryo collections and transfers in 2023

Region/ Country	IVD Embryos					IVP embryos					
	Flushes	Embryos	Embryo transfer			Donors	Oocytes	Embryos	Embryo transfer		
			Fresh	Frozen					Fresh	Frozen	
				Domestic	Foreign					Domestic	Foreign
Asia											
China	272	1,949	783	1,166	0	1,159	28,859	5,485	0	0	0
Total	272	1,949	783	1,166	0	1,159	28,859	5,485	0	0	0
Europe											
UK	20	200	0	0	0	0	0	0	0	0	0
Total	20	200	0	0	0	0	0	0	0	0	0
N America											
Mexico	37	234	215	19	0	0	0	0	0	0	0
USA	2,131	12,569	10,427	1,751	0	579	10,791	3,083	2,478	558	0
Total	2,168	12,803	10,642	1,770	0	579	10,791	3,083	2,478	558	0
Oceania											
Australia	147	925	665	205	7	0	0	0	0	0	0
Total	147	925	665	205	7	0	0	0	0	0	0
S America											
Peru	3	16	16	0	0	0	0	0	0	0	0
Total	3	16	16	0	0	0	0	0	0	0	0
Grand Total	2,610	15,893	12,106	3,141	7	1,738	39,650	8,568	2,478	558	0

Embryo collection or production and transfers in goats

Table 12. Horses: *in vivo*-derived (IVD) and *in vitro*-produced (IVP) embryo collections and transfers in 2023

Region/ Country	IVD Embryos					IVP embryos					
	Flushes	Embryos	Embryo transfer			Donors	Oocytes	Embryos	Embryo transfer		
			Fresh	Frozen					Fresh	Frozen	
				Domestic	Foreign					Domestic	Foreign
Europe											
Estonia	5	6	5	0	0	0	0	0	0	0	4
Finland	17	7	7	0	0	2	1	0	0	0	0
France	1,590	731	875	0	0	0	0	0	0	0	75
Hungary	3	3	3	0	0	46	793	100	0	7	76
Italy	0	0	0	0	0	3,357	43,541	6,667	11	840	0
Portugal	74	52	52	52	0	26	283	63	0	0	0
Romania	53	32	32	0	0	0	0	0	0	0	0
Russian Fed.	26	16	14	1	0	32	42	0	0	0	0
Spain	0	25	0	0	0	181	1,519	276	0	0	0
Sweden	50	32	32	0	4	0	0	0	0	0	0
Total	1,818	904	1,020	53	4	3,644	46,179	7,106	11	847	155
N America											
Mexico	125	116	100	0	0	101	95	78	28	0	0
USA	876	556	877	42	0	1,400	7,453	2,955	422	629	0
Total	1,001	672	977	42	0	1,501	7,548	3,033	450	629	0
S America											
Brazil	40,102	24,127	23,910	0	0	0	31,150	6,230	3,127	3,103	0
Total	40,102	24,127	23,910	0	0	0	31,150	6,230	3,127	3,103	0
Grand Total	42,921	25,703	25,907	95	4	5,145	84,877	16,369	3,588	4,579	155

Embryo collection or production and transfers in horses