

National Statistics of Embryo Transfer Activity in Europe 2016



AETE

Association Européenne des Technologies de l' Embryon
Association of Embryo Technology in Europe



From AETE questionnaire to IETS database



Country:	
Other	
Information	

Bovine *In vitro* embryo production

Breeds	Ovum pick up (OPU)			
	N° of OPU sessions	N° of oocytes collected	N° of transferable embryos	N° of IVF s with conv /sexed sem
Dairy, non-stimulated				conv.
				sexed
Dairy, stimulation				conv.
				sexed
Beef or other, non-stimulated				conv.
				sexed
Beef or other, stimulation				conv.
				sexed
Total				
	N° of slaughtered donors (genetic recovery)	N° of oocytes collected from slaughtered	N° of transferable embryos from slaughtered	
Total				

Slaughtered donors: only include oocytes and embryos produced for commerce, not for research purposes.

Bovine embryo technologies

	N° of <i>In vivo</i> embryos	N° of embryos
Number of sexed embryos (via biopsy)		
Number of genotyped embryos		

Bovine embryo transfer

	Total number of transferred embryos		
	Fresh	Frozen	
		Domestic origin	Foreign origin
<i>In vivo</i>			
<i>In vitro</i>			

Number of embryo collected

Notes: Re number of flushes, if no sexed semen data available, put data under "Conventional Semen"
 Re number of OPU sessions, if no information available on "non-stimulated" vs "stimulated", put data under "non-stimulated"
 Re dairy and beef breeds, if no information available as to cattle type, put all under your most common situation.

SPECIES	TYPE	No. flushes		Total No of Collections	Total No. Transferable Embryos Collected
		Conventional semen	Sexed semen		
BOVINE IN-VIVO	Dairy				
	Beef & Other Breeds				
SPECIES	TYPE	No. of OPU sessions		No. of Oocytes	No. of transferable embryos**
BOVINE IN-VITRO OVUM-PICKUP	Dairy - non-stimulated	Conventional semen	Sexed semen		
	Dairy - stimulated				
	Beef or other - non-stimulated				
	Beef or other - stimulated				
BOVINE IN-VITRO ABATTOIR	No. abattoir donors		No. of Oocytes	No. of transferable embryos**	
	Conventional semen	Sexed semen			
	DAIRY				
BEEF					
BOVINE EMBRYO TECHNOLOGIES	No. in-vivo embryos		No. in-vitro embryos		
	No. of sexed embryos (via biopsy)				
	No. of genotyped embryos				
		No. flushes		No. of transferable embryos**	
WATER BUFFALO	<i>Bubalis bubalis</i>	in vivo only			
SHEEP	in vivo only				
GOATS	in vivo only				
CERVIDS	in vivo only				
HORSES	in vivo only				
SWINE	in vivo only				
OTHERS	in vivo only				
		No. OPU sessions		No. of Oocytes	No. of transferable embryos**
		Conventional semen	Sexed semen		
WATER BUFFALO	<i>Bubalis bubalis</i>	in vitro only			
SHEEP	in vitro only				
GOATS	in vitro only				
CERVIDS	in vitro only				
HORSES	in vitro only				
SWINE	in vitro only				
OTHERS	in vitro only				



Data collection

- Questionnaire was sent to **37** countries
- **31** countries answered (81 %)
 - (8 reported no activity in bovine ET)
- 6 countries didn't reply, data is missing



Return of questionnaires

1st Turkey, Ebru Emsen

2nd Israel, Amir Shifman

3rd Denmark, Henrik Callesen



Special acknowledgement:

Denmark, Henrik Callesen

Spain, Daniel Martinez Bello

Finland, Seija Vahtiala

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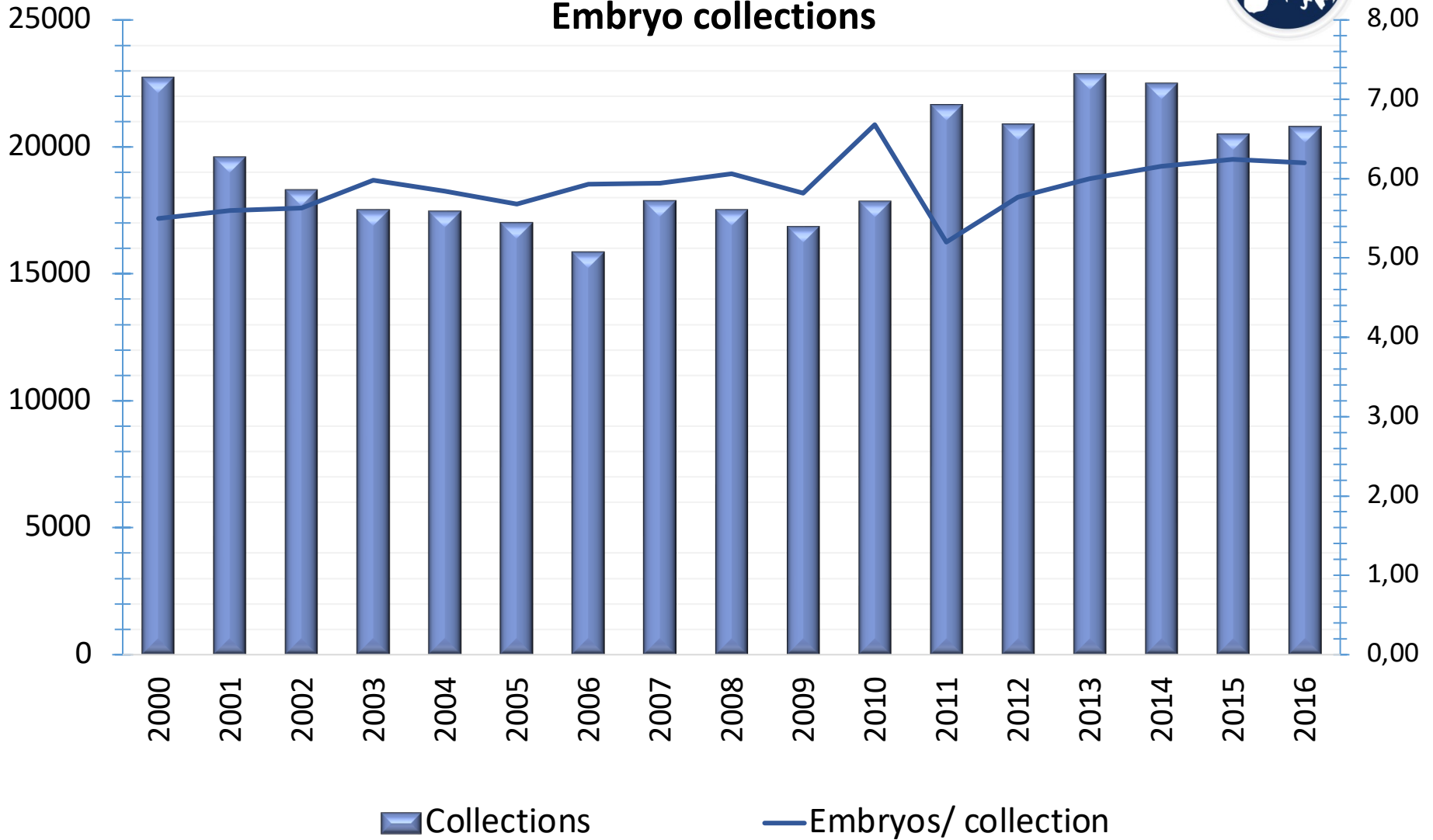
UK, Roger Sturmey and Brian Graham



Bovine *In vivo* embryo production



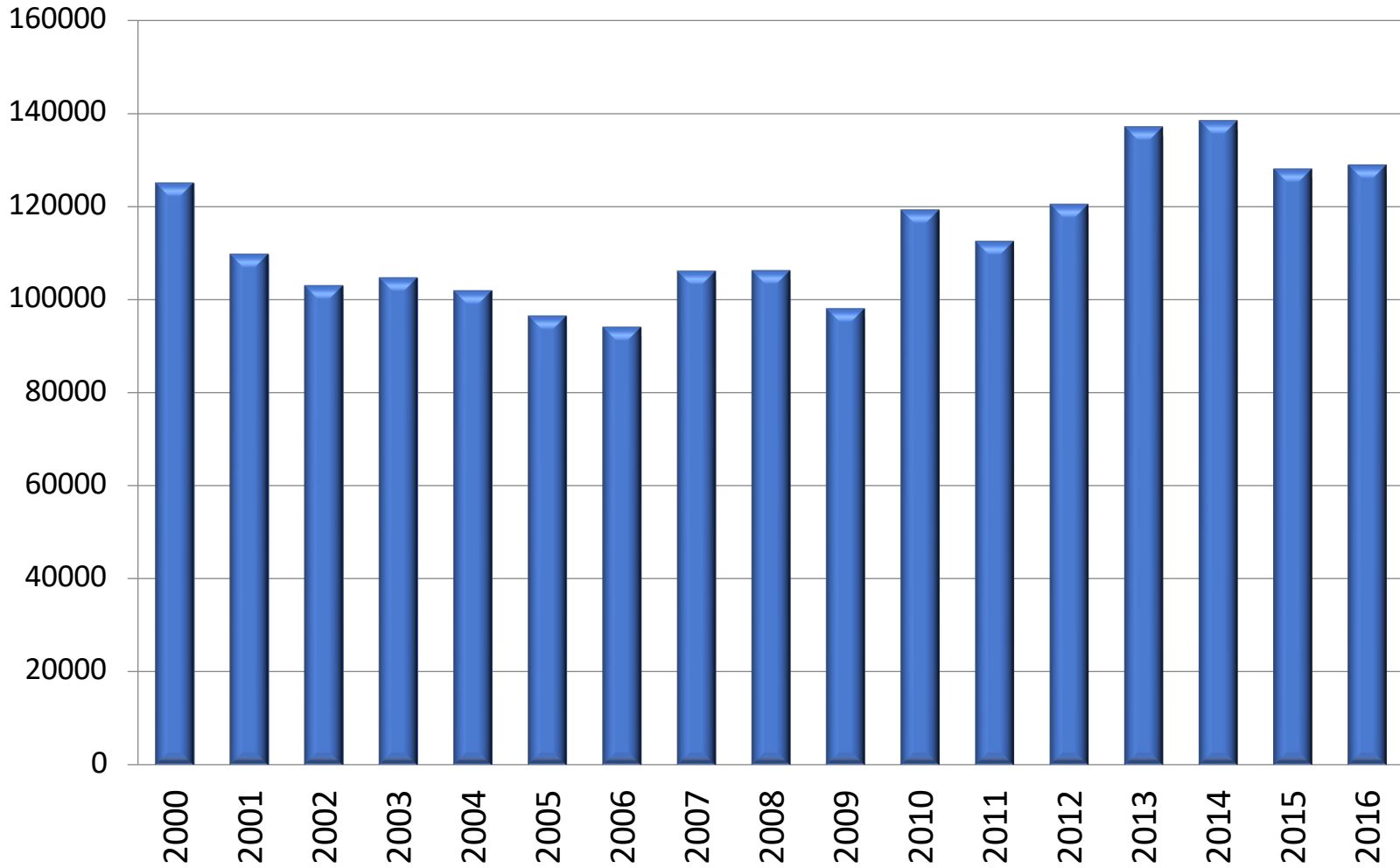
Embryo collections



20 783 collections (2015: 20 497) 6.2 embryos/ collection



Transferable in vivo embryos



128 877 embryos produced (2015: 127 980)

Countries sorted by no. of collections



Country	Collections
France	6260
Germany	3201
Italy	1975
Netherlands	1836
Russian Federation	1298
Belgium	1135
United Kingdom	959
Ireland	857
Denmark	679
Spain	610
Switzerland	485
Finland	329
Austria	259
Sweden	204
Poland	192
Luxembourg	180
Portugal	131
Hungary	111
Norway	60
Serbia	11
Slovenia	9
Ukraine	2



Country	Collections/1000 dairy cows
Luxembourg	3,08
France	1,36
Finland	1,20
Denmark	1,12
Netherlands	1,02
Italy	0,92
Switzerland	0,84
Germany	0,69
Sweden	0,60
Portugal	0,49
Spain	0,48
United Kingdom	0,39
Austria	0,36
Belgium	0,31
Norway	0,16
Ireland	0,13
Poland	0,09
Slovenia	0,08
Hungary	0,08
Russian Federation	0,07



Collections by breed

- 77 % dairy
- 23 % beef

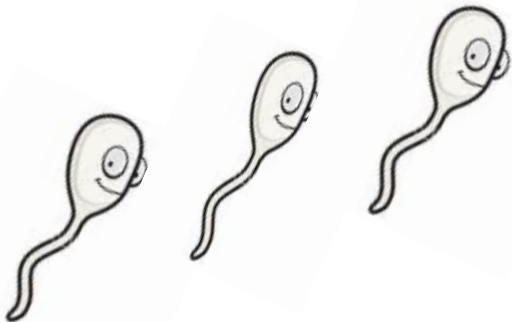
Country	Collections	Beef
Belgium	1135	86 %
Hungary	111	83 %
Ireland	857	80 %
Russian Federation	1298	55 %
Norway	60	42 %
Spain	610	35 %
Austria	259	25 %



Sex-sorted semen

- 13 countries reported data on sexed semen (11 countries in 2015)
- Sexed semen was used in 7 % of collections

Country	Collections	Sexed semen
Russian Federation	1298	35 %
Portugal	131	30 %
Switzerland	485	28 %
Spain	610	27 %
Slovenia	9	22 %
Poland	192	21 %
Serbia	11	18 %
Austria	259	10 %
France	6260	9 %
Finland	329	5 %
Sweden	204	2 %
Hungary	111	2 %
Belgium	1135	1 %








Bovine *In vitro* embryo production

OPU-IVP

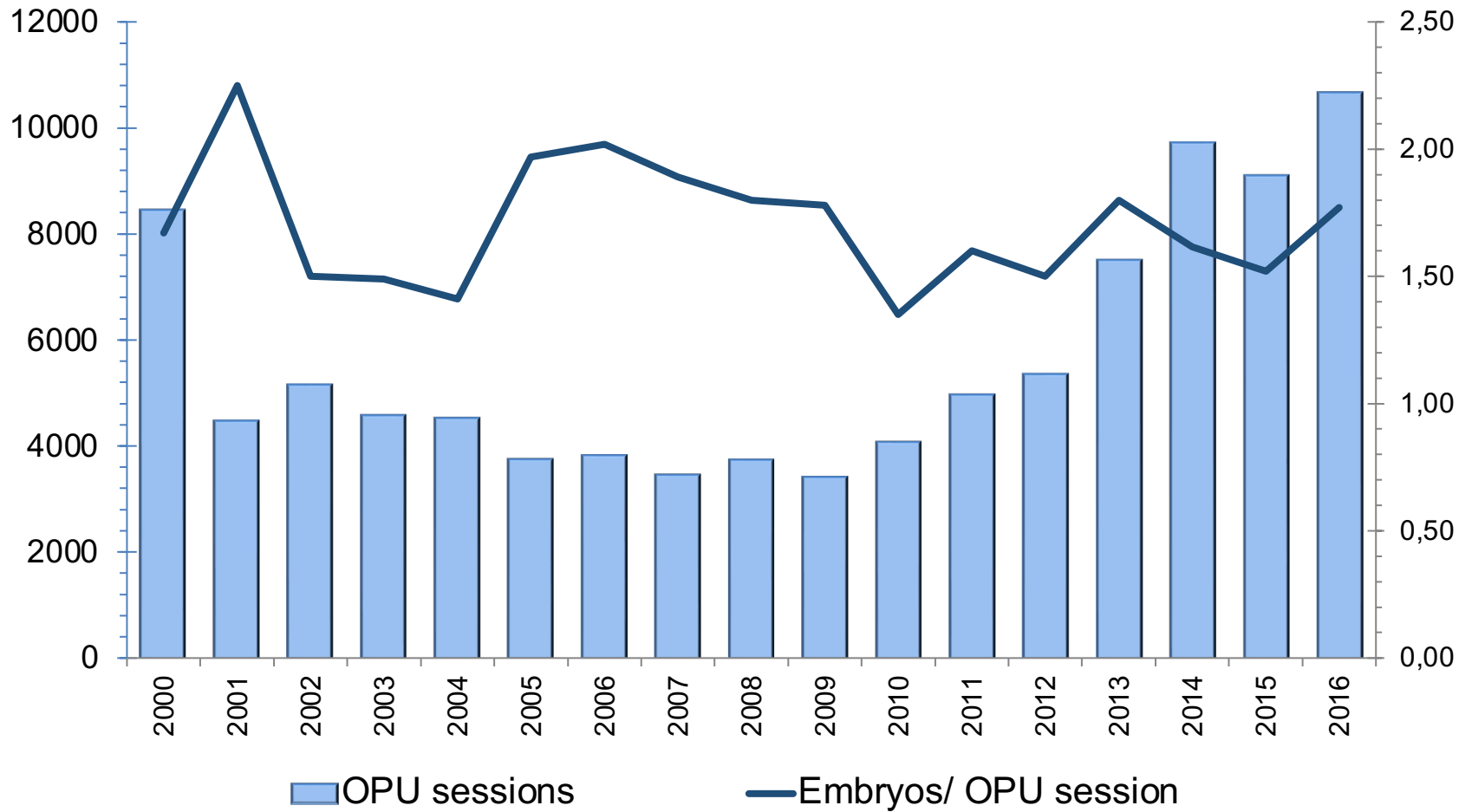


Country	Total sessions	Oocytes	Embryos
Netherlands	4726	45662	8385
Russian Federation	1519	6076	911
Germany	1352	12505	1919
United Kingdom 	886	6116	1415
Spain	734	9892	2579
France	611	5331	1628
Italy	581	7197	1510
Finland	214	1477	462
Serbia 	14	80	35
Poland 	13	64	34
Austria	1	7	1
Total	10 651	94 407	18 879

11 countries (2015: 8)



OPU sessions



10 651 OPU-sessions (2015: 9 092)



OPU – breed and stimulation

Breed

- 91 % of OPU sessions on dairy breeds

Stimulation

- Stimulated 58% (3%)
- Non-stimulated 42% (15%)
- *Not specified* 0% (82%)

Semen type

- Sexed semen was used in 21% of sessions (2015:4%)



OPU – effect of stimulation

Non-stimulated (& non-specified) sessions:

- 1.6 embryos/ session

Stimulated sessions:

- 1.9 embryos/ session

In vitro embryo production from slaughtered donors



Country	Donors	Oocytes	Embryos
France	1	17	10
Italy	8	302	70
Netherlands	61	8998	141
Portugal	1	740	43
Spain	65	1060	471
United Kingdom	120	7200	360
<i>Total</i>	256	18 317	1095

(4.3 embryos/donor)

Total bovine embryo production 2016



Transferable embryos produced:

• In vivo	128 877	(2015: 127 980)
• In vitro	19 974	(2015: 13 780)
	<u>= 148 851</u>	(2015: 141,760)

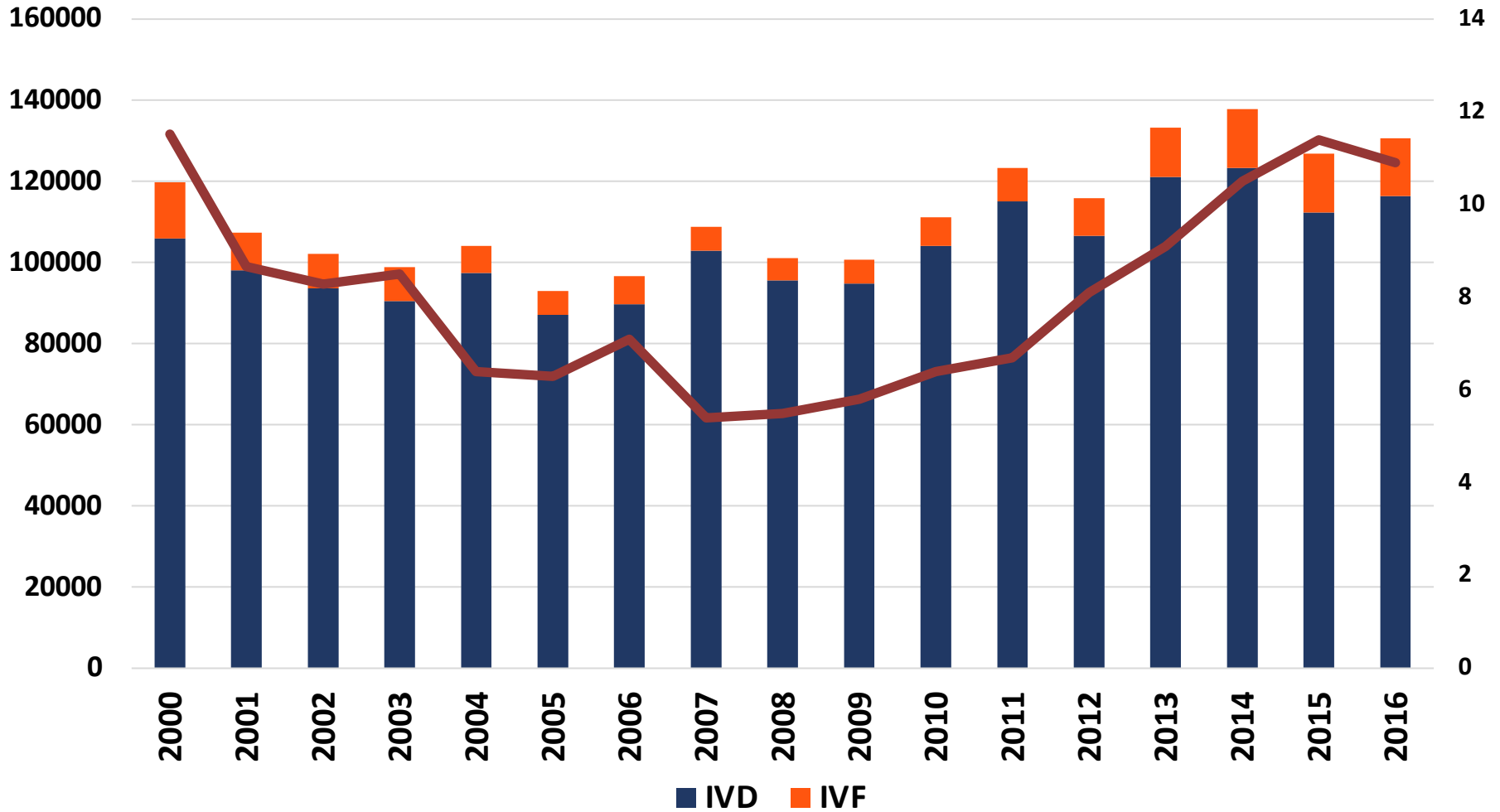


Bovine embryo transfer

In vivo & in vitro



Transferred embryos (% IVP)



130 635 (2015: 126 808)

Countries >1000 transfers (*In vivo*)

Country	Transfers	% of IVD
France	39636	34,1 %
Germany	20318	17,5 %
Netherlands	12041	10,3 %
Russian Federation	6720	5,8 %
Italy	6300	5,4 %
Belgium	6125	5,3 %
Ireland	6013	5,2 %
Denmark	3642	3,1 %
Spain	2992	2,6 %
Switzerland	2956	2,5 %
Finland	2559	2,2 %
Austria	1732	1,5 %
United Kingdom	1309	1,1 %
Poland	1138	1,0 %
Sweden	1003	0,9 %



Exported embryos

- 2927 embryos were exported (2187 dairy, 740 beef)

- 8 countries

Austria

Belgium

Denmark

Finland

France

Spain

Switzerland

United Kingdom

- No export of *in vitro* embryos



Sexing and genotyping of embryos

Country	Sexed embryos		Genotyped embryos	
	In vivo	In vitro	In vivo	In vitro
France	2688	0	1595	0
Germany	966	0	416	0
Netherlands		0	381	0
Total	3654	0	2392	0

Increase by 1300 genotyped embryos compared to 2015



Embryo production in other species

Horse

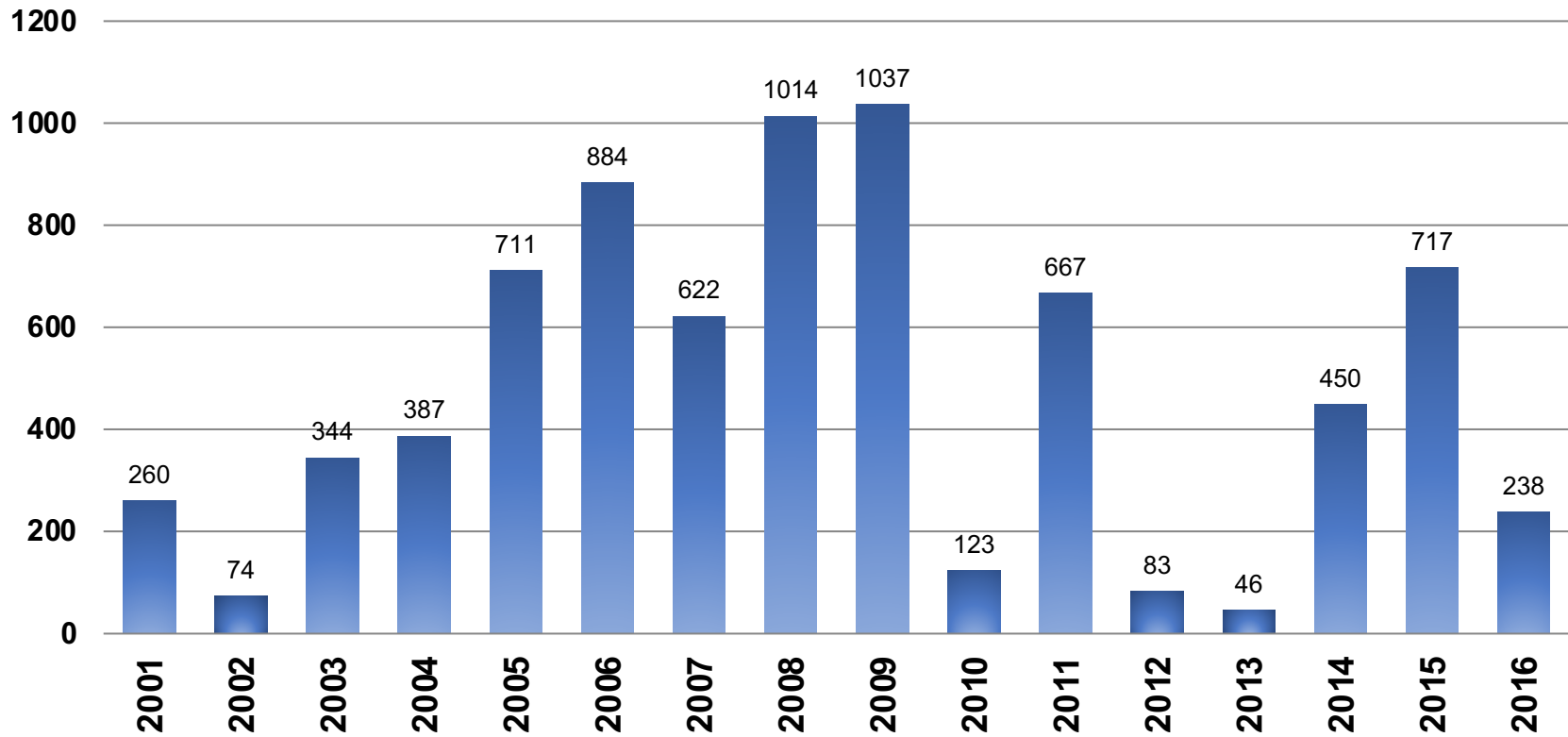
In vivo

- France, Spain, Poland, Sweden

Embryo production		Embryo transfer	
Collections	Embryos	Fresh	Frozen
1616	860	228	10
0.53 embryos/ collection			



Embryo transfer equine (*In vivo*)





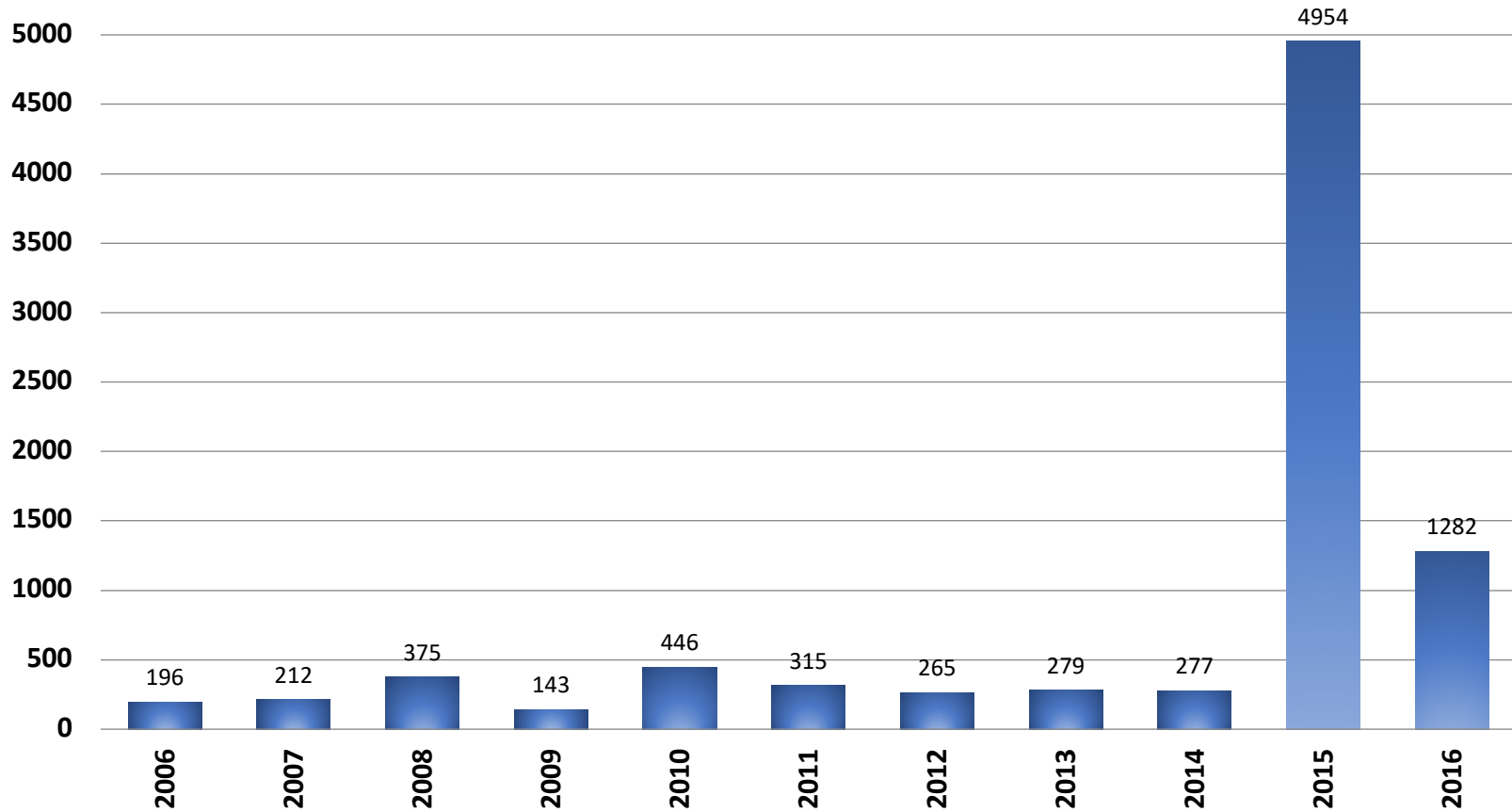
Horse – *In vitro* (OPU-IVP)

- Italy

Embryo production			Embryo transfer	
OPU sessions	Oocytes	Embryos	Fresh	Frozen
965	11056	800	61	229



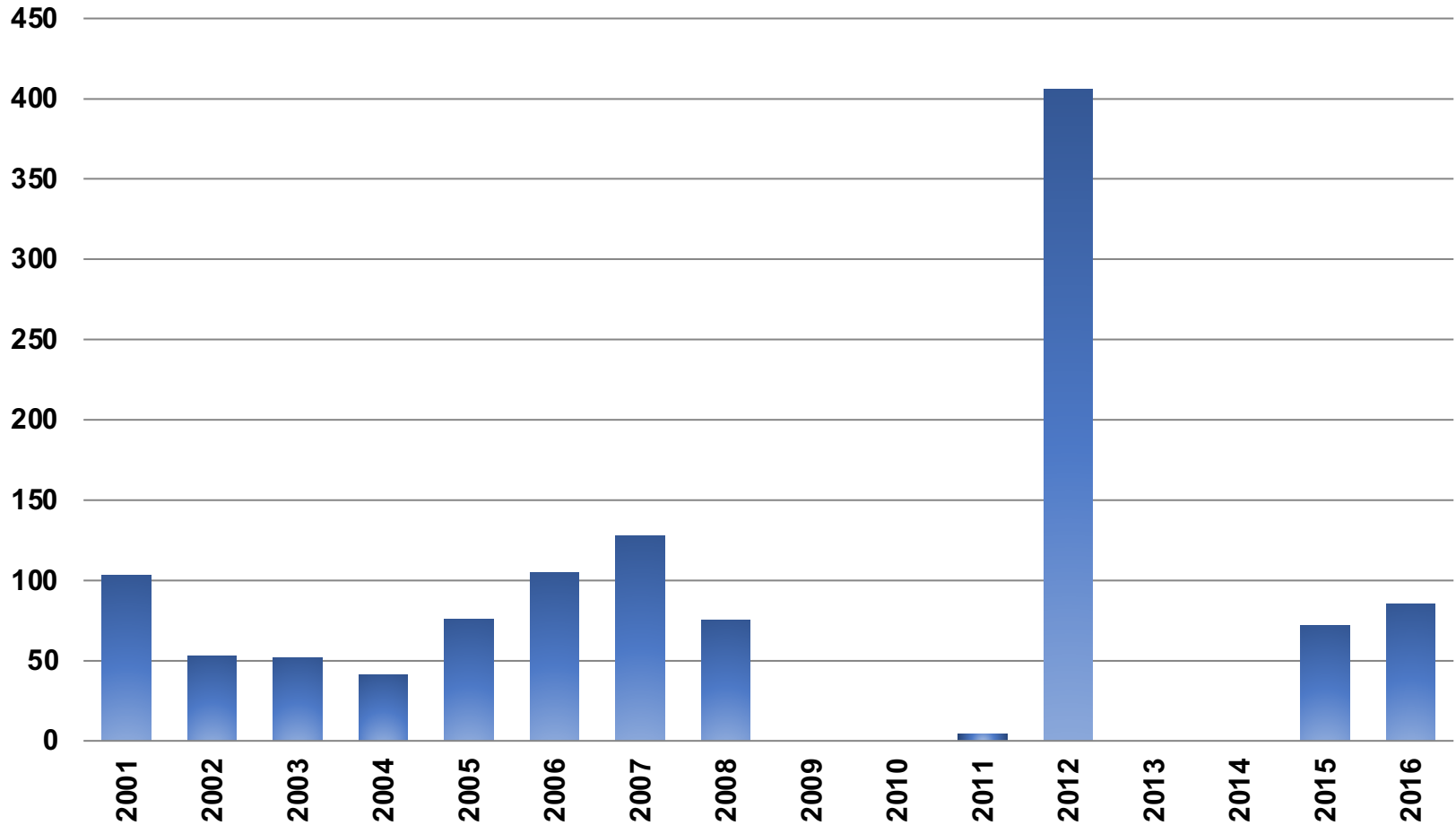
Embryo transfer sheep



- Sweden, United Kingdom, Norway, Turkey, Hungary, France
- 63% of transferred embryos were foreign origin (frozen)
- 1200 sheep embryos exported (UK)



Embryo transfer goat



- Turkey, Spain, UK, France
- UK exported embryos

To conclude

- New data collection system implemented successfully
- No changes in the intensity of *in vivo* embryo production
- Slight increase in the *in vitro* embryo production
- Increase in the number of genotyped embryos, but still only a limited number of countries
- Increase in the use of sexed semen in IVF?



Tables are available on AETE website: **Electronic Proceedings**

Graphs and overview on the website: **Statistics 2016 PDF** (will be uploaded after the meeting)

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Thank You, all data collectors!