

## **Incorporation of published and presented work**

This thesis encapsulates individual published manuscripts, abstracts, book chapters and oral presentations, as follows:

### **Published manuscripts 2011 to date**

Simon Fishel and **Alison Campbell**. Embryo Selection for IVF – is there a signal in the noise? Focus on Reproduction, cover story. September 2011.

**A Campbell**, S Fishel, N Bowman, S Duffy, M Sedler, C Fontes Lindemann Hickmann  
Modelling a risk classification of aneuploidy in human embryos using non-invasive morphokinetics  
Reproductive BioMedicine Online (2013) 26, 477-485.

<https://kar.kent.ac.uk/84027/>

**A Campbell**, S Fishel, N Bowman, S Duffy, M Sedler, S Thornton  
Retrospective analysis of outcomes after IVF using an aneuploidy risk model derived from time-lapse imaging without PGS  
Reproductive BioMedicine Online (2013) 27, 140-146.

<https://kar.kent.ac.uk/84028/>

**Alison Campbell**, Simon Fishel, Mette Laedgdsmand  
Aneuploidy is a key causal factor of delays in blastulation detected by time lapse imaging.  
Author response to 'A cautionary note against aneuploidy risk assessment using time lapse imaging'. Reproductive BioMedicine Online (2014), 28 (3). pp. 279-283.

<https://kar.kent.ac.uk/84029/>

Kirkegaard K, **Campbell A**, Agerholm I, Bentin-Ley U, Gabrielsen A, Kirk J, Sayed S, Ingerslev HJ.  
Limitations of a time-lapse blastocyst prediction model: a large multicentre outcome analysis.  
Reproductive biomedicine online. 2014 Aug 1; 29 (2). pp. 156-8.

<https://kar.kent.ac.uk/84031/>

Ciray HN\*, **Campbell A\***, Agerholm IE, Aguilar J, Chamayou S, Esbert M, Sayed S. Proposed guidelines on the nomenclature and annotation of dynamic human embryo monitoring by a time-lapse user group. *Human Reproduction*. 2014 Oct 24; 29 (12): 2650-60.

<https://kar.kent.ac.uk/84032/>

MN Shahbazi, A Jedrukik, S Vuoristo, G Recher, A Hupalowska, V Bolton, NNM Fogarty, **A Campbell**, LD Gasparini, D Ilic, Y Khalaf, KK Niakan, S Fishel, M Zernicka-Goetz, Self-organisation of the human embryo in the absence of maternal tissues.

*Nature Cell Biology*, 18, 700-708, 2016

<https://kar.kent.ac.uk/84034/>

S Fishel, **A Campbell**, S Montgomery, R Smith, L Nice, S Duffy, L Jenner, K Berrisford, L Kellam, R Smith, ID'Cruz, A Beccles, Live births after embryo selection using morphokinetics versus conventional morphology: a retrospective analysis.

*Reproductive BioMedicine Online*, 2017 Oct; 35(4): 407-416

<https://kar.kent.ac.uk/84035/>

ESHRE Special Interest Group of Embryology, Alpha Scientists in Reproductive Medicine. The Vienna consensus: report of an expert meeting on the development of art laboratory

Kellam L, Pastorelli LM, Bastida AM, Senkbeil A, Montgomery S, Fishel S, Campbell A, Perivitelline threads in cleavage-stage human embryos: observations using time-lapse imaging. *Reproductive BioMedicine Online*. 2017 Dec;35(6):646-656. doi: 10.1016/j.rbmo.2017.09.004.

<https://kar.kent.ac.uk/84036/>

S Fishel, **A Campbell**, S Montgomery, R Smith, L Nice, S Duffy, L Jenner, K Berrisford, L Kellam, R Smith, F Foad, Ashley Beccles. Time-lapse imaging algorithms rank human preimplantation embryos according to the probability of live birth. *Reproductive BioMedicine Online*, 2018; 37 (3): 304-313

<https://kar.kent.ac.uk/84037/>

Simon Fishel, **Alison Campbell** et al. Evolution of embryo selection for IVF from subjective morphology assessment to objective time-lapse algorithms improves chance of live birth. Reproductive BioMedicine Online, 2020; 40 (1): 61-70

<https://kar.kent.ac.uk/84038/>

Cairo Consensus Group. There is only one thing that is truly important in an IVF lab: Everything. Cairo Consensus Guidelines on IVF Culture Conditions.

Reproductive BioMedicine, 2020; 40 (1): 33-60

<https://kar.kent.ac.uk/84039/>

### **Books and chapters**

**Alison Campbell**, Simon B Fishel (eds). Atlas of Time Lapse Embryology. CRC Press, 2014

<https://kar.kent.ac.uk/84041/>

**Alison Campbell**. Time-lapse, the cell cycle, distribution of morphokinetic timings and known implantation data. Chapter 3, in Atlas of Time Lapse Embryology, CRC Press 2014

<https://kar.kent.ac.uk/84043/>

**Alison Campbell**. Clinical aspects of time lapse embryology. Chapter 2, in Atlas of Time Lapse Embryology, CRC Press 2014

<https://kar.kent.ac.uk/84042/>

**Alison Campbell**. Noninvasive techniques: Embryo selection by Time-lapse imaging. A practical guide to selecting gametes and embryos. Markus Montag (ed.). CRC Press, 2013

<https://kar.kent.ac.uk/84045/>

Ahlström A, **Campbell A**, Ingerslev HJ, Kirkegaard K. Prediction of Embryo Viability by Morphokinetic Evaluation to Facilitate Single Transfer. In Screening the Single Euploid Embryo 2015 (pp. 133-145). Springer, Cham.

<https://kar.kent.ac.uk/84046/>

**Alison Campbell**, Patricia Collins. Preimplantation development. Section 2 : Embryogenesis. Standring S, editor. Gray's Anatomy: The anatomical basis of clinical practice. Elsevier Health Sciences; 2015

<https://kar.kent.ac.uk/84048/>

## Abstracts (2012 – 2020)

### 2012

A Campbell, S Duffy, L Best, K R Jordan, N Bowman, M Sedler, S Fishel  
*Assessment of early embryo development by the EmbryoScope™ (Unisense, Denmark) in relation to oocyte ploidy: ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

C Drew, C Hickman, L Best, N Bowman, K Jordan, S Duffy, A Campbell, S Fishel  
*A time lapse investigation using the EmbryoScope™ (Unisense, Denmark) into the timing of PB2 extrusion to review the standard operating procedure for clinical preimplantation genetic screening (PGS) ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

N Bowman, L Best, A Campbell, K Jordan, K Gardner, M Sedler, S Fishel  
*The first UK cases of trophectoderm biopsy for aneuploidy screening of blastocysts, using Gene Security Network's SNP array and 'Parental Support': ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

N Bowman, A Campbell, L Best, K Jordan, K Gardner, M Sedler, C Lynch, S Fishel  
*Inference of oocyte ploidy following 1<sup>st</sup> (PB1) and 2<sup>nd</sup> (PB2) array CGH. Initial experiences and clinical results: ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

L Best, A Campbell, L Lee, N Bowman, E Power, KR Jordan, K Harrison, S Duffy, L Kellam, S Fishel  
*'Rescue' ICSI of late matured oocytes following failed intracytoplasmic sperm injection (ICSI) fertilisation: ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

A Burchill, A Campbell, S Fishel, R Smith, D Hulme, C Drezet, S Foley, C Shearer, C Barton  
*A retrospective audit of fast-cleaving fresh embryos in 83 extended culture (EC) cycles: ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

Duffy, A Campbell, L Best, S Fishel  
*The UK's first EmbryoScope™ IVF treatment cycles: an assessment of 92 patient outcomes: ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

R Smith, A Burchill, C Drezet, S Foley, C Shearer, A Campbell, S Fishel  
*Elective single blastocyst transfer, with suitable supernumerary embryos vitrified versus day 3 (D3) elective single embryo transfer (eSET) and day 3 double embryo transfer (DET) with conventionally frozen supernumerary embryos. A comparison of cumulative clinical pregnancy rates (CPR). Which is the better policy? : ACE 8<sup>th</sup> Annual Conference, Leeds, January 2012*

S Fishel, E Cater, C Lynch, L Jenner, A Campbell  
*Polar body 1, polar body 2 and blastomere analysis in PGS treatment: PGDIS, Bregenz, Austria, May 2012*

A Campbell, CFL Hickman, S Duffy, N Bowman, K Gardner, S Fishel  
*Morphokinetics of 'Aneuploid' and 'Euploid' human embryos, inferred by polar body or trophectoderm biopsy: ESHRE 28<sup>th</sup> Annual Meeting, Istanbul, July 2012*

CFL Hickman, A Campbell, S Duffy, S Fishel  
*'Reverse Cleavage': its significant with regards to human embryo morphokinetics, ploidy and stimulation protocol: ESHRE 28<sup>th</sup> Annual Meeting, Istanbul, July 2012*

E Cater, C Lynch, L Jenner, K Berrisford, A Campbell, N Keown, H Rouse, A Craig, S Fishel  
*Mosaicism with the day 3 embryo previously inferred as aneuploidy from the first polar body: ESHRE 28<sup>th</sup> Annual Meeting, Istanbul, July 2012*

L Best, A Campbell, S Fishel  
*Multicentre Assessment of survival and viability of vitrified blastocysts stored in nitrogen vapour compared with those stored in liquid nitrogen: ESHRE 28<sup>th</sup> Annual Meeting, Istanbul, July 2012*

K Gardner, A Campbell, C Clayton, G Atkinson, S Fishel

*An investigation into two clusters of monozygotic twinning following assisted conception in a large UK IVF facility. Can we identify patients at higher risk?* ESHRE 28<sup>th</sup> Annual Meeting, Istanbul, July 2012

N Bowman, A Campbell, S Duffy, K Gardner, M Sedler, S Fishel

*Changing Culture Conditions. Blastocyst ploidy following standard incubation and uninterrupted culture in the Embryoscope: American Society for Reproductive Medicine 68<sup>th</sup> Annual Meeting, San Diego, California, October 2012*

### **2013**

C Shearer, A Burchill, C Drezet, S Foley, R Smith, A Shaker, S Fishel, A Campbell

*A case study reporting Schistosoma haematobium miracidia detected in semen and the outcome on treatment decision:* Fertility 2013, Liverpool, UK, January 2013

L Best, S Montgomery, A Campbell, S Fishel

*Standard Incubation versus Embryoscope Incubation: a retrospective analysis of pregnancy outcome:* Fertility 2013, Liverpool, UK, January 2013

K Gardner, S Montgomery, A Campbell, S Fishel

*An investigation into the effect of storing sperm in the dark between the time of preparation and insemination:* Fertility 2013, Liverpool, UK, January 2013

S Montgomery, S Duffy, N Bowman, M Sedler, A Campbell, S Fishel

*Does the timing and degree of cleavage stage embryo fragmentation differ in Euploid and Aneuploid Embryos?* Fertility 2013, Liverpool, UK, January 2013

A Campbell, C Fontes Lindemann Hickman, S Duffy, S Fishel

*Comparison of morphokinetic variables of implanted and non-implanted embryos. A search for exclusion criteria:* Fertility 2013, Liverpool, UK, January 2013

A Campbell, C Fontes Lindemann Hickman, S Duffy, N Bowman, M Sedler, S Fishel

*A non-invasive time-lapse model to classify the risk of aneuploidy in embryos:* Fertility 2013, Liverpool, UK, January 2013

MJ Sedler, N Bowman, A Campbell, K Jordan, L Best, D Moulton, S Fishel

*PGS using SNP array and Parental Support technology to evaluate embryo ploidy status via trophectoderm biopsy:* Clinical outcome: Fertility 2013, Liverpool, UK, January 2013

L Best, A Campbell, S Duffy, S Montgomery, S Fishel

*Does one model fit all? Testing a published embryo selection algorithm on independent time-lapse data:* ESHRE Annual Meeting, London, UK, July 2013

E Cater, D Hulme, L Jenner, A Campbell, S Fishel

*Retrospective analysis of clinical outcome of vitrified blastocyst post thaw using time-lapse imaging and standard incubation:* ESHRE Annual Meeting, London, UK, July 2013

N Bowman, S Montgomery, L Best, A Campbell, S Duffy, S Fishel

*Comparison of clinical results between standard and uninterrupted embryo culture, where there are no embryos to select between:* ESHRE Annual Meeting, London, UK, July 2013

S Duffy, A Campbell, S Montgomery, C Hickman, S Fishel

*Does gender affect pre-implantation embryonic development rates? Looking back at the baby pictures:* ESHRE Annual Meeting, London, UK, July 2013

E Power, S Montgomery, S Duffy, K Jordan, A Campbell, S Fishel

*Can completion of compaction predict implantation outcome?:* ESHRE Annual Meeting, London, UK, July 2013

A Campbell, S Fishel, S Duffy, S Montgomery  
*Embryo selection model defined using morphokinetic data from human embryos to predict implantation and live birth*: Conjoint Meeting of the International Federation of Fertility Societies and the American Society for Reproductive Medicine, Boston, Massachusetts, October 2013

A Campbell, S Fishel, E Cater et al  
*Retrospective assessment of time lapse data from 6730 human embryos to establish incidence rates for preimplantation cleavage anomalies*: ACE, Sheffield, UK, January 2014  
*Oral presentation – best presentation prize*

A Campbell, S Fishel, S Montgomery, L Jenner, L Nice, R Smith, S Duffy, D Hulme, D Sivanantham  
*Inter clinic comparison of morphokinetic variables*: ACE, Sheffield, UK, January 2014

CF Drew, S Montgomery, A Campbell, S Fishel  
*Prospective randomised controlled trial to assess the effect of EmbryoGlue as a medium for embryo transfer*: ACE, Sheffield, UK, January 2014

D Hulme, L Jenner, A Campbell, S Fishel  
*A randomised controlled comparison of clinical outcome, following time lapse and standard incubation*: ACE, Sheffield, UK, January 2014

S Sivanantham, LR Nice, A Campbell, S Fishel  
*A comparative study of pronuclear fading times and implantation using embryos cultured using time lapse imaging*: ACE, Sheffield, UK, January 2014

S Sivanantham, LR Nice, A Campbell, S Fishel  
*Validation of pronuclear assessment timings using embryos cultured using time lapse imaging*: ACE, Sheffield, UK, January 2014

E Cater, A Campbell, L Jenner, S Fishel  
*Preliminary retrospective study investigating the incidence and significance of cytoplasmic strings in the human blastocyst*: ACE, Sheffield, UK, January 2014

F Toal, G Emerson, A Campbell, S Fishel  
*Introduction of a PGD program into the Republic of Ireland under the EUTCD*: ACE, Sheffield, UK, January 2014

K Gardner, S Montgomery, L Best, A Campbell, S Fishel  
*Case Report: A successful fertilisation and ongoing pregnancy following calcium ionophore artificial oocyte activation after recurrent failed fertilisation with ICSI*: ACE, Sheffield, UK, January 2014

L Best, A Campbell, S Montgomery, R Smith, S Duffy, D Hulme, D Sivanantham, L Jenner, L Nice, S Fishel  
*Does female age matter when selecting blastocysts for transfer using a novel morphokinetic based blastocyst selection algorithm?*: ESHRE 2014, Munich, Germany, June/July 2014

R Smith, A Campbell, M Laegdsmand, S Montgomery, L Best, S Duffy, D Hulme, D Sivanantham, L Jenner, L Nice, S Fishel  
*The use of live birth as an outcome measure for a new morphokinetic based blastocyst selection algorithm*: ESHRE 2014, Munich, Germany, June/July 2014

M Regueira, E Cater, L Jenner, G Woodhead, C Lynch, A Campbell, S Fishel  
*Retrospective assessment of second polar body alignment using time lapse imaging*: ESHRE 2014, Munich, Germany, June/July 2014

L Lee, S Montgomery, S Duffy, K Jordan, A Campbell, S Fishel  
*Is it necessary to refresh Global medium on D3 during EmbryoScope culture?*: ESHRE 2014, Munich, Germany, 2014

S Montgomery, A Campbell, M Laegdsmand, R Smith, L Best, D Hulme, D Sivanantham, L Jenner, L Nice, S Fishel

*The relationship between early cleavage morphokinetic time points is more predictive of implantation and live birth than single time points alone:* ESHRE 2014, Munich, Germany, June/July 2014

## 2015

S Rhodes, L Nice, A Campbell, S Fishel

*Morphokinetic comparison of culture medium: LifeGlobal® supplemented with 10% Dextran Serum supplementation vs Irvine Scientific Continuous Single Culture™:* Fertility 2015, Birmingham, January 2015

C Drezet, R Smith, A Burchill, S Foley, C Shearer, A Campbell, S Fishel

*Are split IVF-ICSI cycles an effective way to managing unexplained infertility?:* Fertility 2015, Birmingham, January 2015

C Shearer, R Smith, A Campbell, S Fishel

*The time interval between 1 and 7 hours from oocyte recovery to IVF insemination has no impact on outcome data:* Fertility 2015, Birmingham, January 2015

S Foley, R Smith, C Drezet, A Campbell, S Fishel

*To re-freeze or not to re-freeze? That is the question:* Fertility 2015, Birmingham, January 2015

A Campbell, L Best, S Duffy, S Montgomery, R Smith, D Hulme, D Sivanantham, K Berrisford, N Bowman, R Smith, L Jenner, S Fishel

*Time lapse study of the duration, distribution and incidence of specific irregular cleavage patterns in 8988 early embryos:* Fertility 2015, Birmingham, January 2015

A Campbell, S Fishel, D Griffin

*Ploidy, morphokinetics and time lapse imaging: The story so far:* Fertility 2015, Birmingham,

D Hulme, L Jenner, A Campbell, S Fishel

*The incidence of reverse cleavage events identified by time lapse imaging of 13823 embryos:* Fertility 2015, Birmingham, January 2015

E Power, S Montgomery, N Bowman, K Gardiner, A Campbell, S Fishel

*A study of blastomere arrangement at the 4 cell stage in transferred embryos with known clinical outcome:* Fertility 2015, Birmingham, January 2015

K Gardner, R Smith, N Bowman, E Power, S Duffy, S Fishel, A Campbell

*A study of vacuolation in transferred human preimplantation embryos which resulted in live birth, compared with those which did not:* Fertility 2015, Birmingham, January 2015

K Berrisford, A Campbell, E Cater, L Jenner, S Fishel

*Retrospective study of patients using EmbryoGen for embryo culture based on previous clinical history:* Fertility 2015, Birmingham, January 2015

L Jenner, A Campbell, R Smith, S Montgomery, S Fishel

*Introduction of D4 embryo transfer in an IVF clinic:* Fertility 2015, Birmingham, January 2015

N Bowman, K Gardner, E Power, S Montgomery, S Duffy, S Fishel, A Campbell

*Negative association between multichotomous mitosis of blastomeres within cleavage stage embryos and live birth outcomes in 347 embryos:* Fertility 2015, Birmingham, January 2015

A Burchill, R Smith, C Drezet, A Campbell, S Fishel

*Case report: the possible causes and effects of non-apposition of pronuclei in three out of seven embryos cultured in time-lapse culture:* Fertility 2015, Birmingham, January 2015

A Campbell; M Laegdsmand; S Fishel; R Smith; S Montgomery; K Berrisford; R Smith; L Nice and DK Griffin  
*Large scale comparison of morphokinetic timings of over 12,500 IVF and ICSI embryos from insemination to blastulation*: ESHRE 2015, Lisbon, Portugal, June 2015

C Lynch, D Maruthini, M Rangunath, L Jenner, S Fishel  
*First genetically confirmed monozygotic dichorionic diamniotic twin livebirth from a day 5 single blastocyst transfer*: ESHRE 2015, Lisbon, Portugal, June 2015

Best L, Campbell A, Montgomery S, Smith R3, Duffy S, Hulme D, Sivanantham D, Jenner L, Nice L, Berrisford K and Fishel S  
*Is a morphokinetic based selection model for fresh blastocysts transferrable to vitrified blastocysts?* : ESHRE 2015, Lisbon, Portugal, June 2015

Cater E, Jenner L, Campbell A, Fishel S  
*Can oocyte recipient outcome be predicted by oocyte donor age?* : ESHRE 2015, Lisbon, Portugal, June 2015

## 2016

Berrisford K, Jenner, L, Campbell, A, Fishel, S  
*Polar body Vs. blastomere Vs. trophoctoderm biopsy in CARE Nottingham PGS program (2008 onwards)*: ACE 2016 10th Biennial Conference, January 2016, Newcastle, UK

Montgomery, S., Campbell, A, Best, L, Davies, N, Power, E., Gardner, K, Fishel, S.  
*Are time-lapse morphokinetic algorithms corrected for patient age, really necessary*: ACE 2016 10th Biennial Conference, January 2016, Newcastle, UK

Campbell A, Fishel, S, Theodorou, E, Montgomery, S, Smith, Rachel, Griffin, D, Laegdsmand, M  
*Morphokinetic comparison of 1620 human embryos resulting in, or failing to reach, live birth*: ACE 2016 10th Biennial Conference, January 2016, Newcastle, UK

Cater, E, Campbell, A, Jenner, L, Fishel, S  
*Utilisation of embryos generated from ART*: ACE 2016 10th Biennial Conference, January 2016, Newcastle, UK

Jordan K, Montgomery, S, Best, L, Campbell, A, Fishel, S  
*Sibling outcome study to compare outcome data between ICSI and IMSI*: ACE 2016 10th Biennial Conference, January 2016, Newcastle, UK

Murphy L, Jenner L, Campbell A, Fishel S  
*Outcomes following multiple pregnancy in ART cycles*: ACE 2016 10th Biennial Conference, January 2016, Newcastle, UK

Watchter A, Campbell, A, Fishel, S, Ventris, R, Montgomery, S, Nice, L, Jenner, L, Smith, Rachel, Paterson, Y.  
*Patient feedback on time lapse, results from an online survey of 1066 patients during a 33 months period*: ACE 2016 10th Biennial Conference, January 2016, Newcastle, UK

L Jenner, E Cater, A Campbell, S Fishel  
*Analysis of PGS results based on day of biopsy and stage of blastulation*: PGDIS, 15th International Conference on Preimplantation Genetic Diagnosis, May 2016, Bologna, Italy

A Campbell, R Smith, S Montgomery, L Jenner, L Nice, S Rhodes, K Dowell, S Fishel  
*A prospective multicentre comparison of two different single step culture media using sibling embryos*: ESHRE 2016, 32nd Annual Meeting, July 2016, Helsinki, Finland

## 2017

C Lynch, L Jenner, A Campbell, T Gordon, D Griffin

*Live birth following two rounds of trophectoderm biopsy, vitrification, and warming: Assessment of the efficacy of retesting PGD and PGS embryos:* Fertility 2017, Newcastle.

Louise Kellam, Laura Pastorelli, Alison Campbell  
*Observation of commonly occurring Zona-Cytoplasmic Threads (ZCTs) in early embryo development:* Fertility 2017, Newcastle.

George Woodhead, Ellen Armstrong, Louise Kellam, Lucy Jenner, Alison Campbell  
*Case Study: Double Blastocyst Transfer Leading to a Quadruplet Pregnancy:* Fertility 2017, Newcastle.

K. Berrisford, L. Jenner, A. Campbell.  
*Retrospective study of patients using EmbryoGen®/BlastGen™ for embryo culture based on previous clinical history:* Fertility 2017, Newcastle.

Samantha Dale, Laina Murphy, Ellen Armstrong, Lucy Jenner, Alison Campbell  
*A Follow-Up Study Comparing Implantation Rate to Blastocyst Grade in ART Cycles From January 2010 – December 2015:* Fertility 2017, Newcastle.

Allison Benn, Ellen Armstrong, Lucy Jenner, Alison Campbell  
*Use of Thermocoins in laboratory quality control temperature monitoring:* Fertility 2017

A Martin, L Kellam, J Graves, A Campbell, S Fishel  
*Cleavage Orientation in the Early Human Embryo – Considering the Perivitelline Space and the Zone Pellucida:* IX Congreso ASEBIR, November 2017, Madrid, Spain

## **2018**

A Campbell, I Gallos, M Regueira, S Montgomery, L Jenner, A Watcher, S Wheat, F Foad, R Smith, L Nice, S Fishel  
*Side by side: Angle of extrusion of second polar body, relative to position of the first polar body, is significantly associated with clinical outcome:* Fertility 2018, Liverpool, UK

Sue Montgomery, Alison Campbell. *Embryo grading at compaction is highly predictive of outcome.* Fertility 2018, Birmingham.

Best, Louise; Montgomery, Sue; Nice, Lynne; Smith, Rachel; Jenner, Lucy; Campbell, Alison Campbell  
*A prospective multicentre comparison of sibling embryo morphokinetics using two different culture media:* Fertility 2018, Birmingham.

M. Regueira, L. Best, C. Drew, K. Jordan, L. Lee, E. Power, M. Sedler, S. Montgomery, A. Campbell. *Effective use of preimplantation genetic screening following thawing, biopsy and re-vitrification of previously untested cryopreserved embryos:* Fertility 2018, Birmingham.

Drew C, Regueira M, Best L, Jordan K, Lee L, Power E, Sedler M., Montgomery S, Campbell A.  
*Re-Biopsy of 'No result' embryos: A valuable diagnosis?* Fertility 2018, Birmingham.

Sam Rhodes, Judith Byrne, Lynne Nice, Mohammed Khairy, Rahnema Kazem and Alison Campbell.  
*A 5 year review of live birth and multiple birth rate:* Fertility 2018, Birmingham.

Angel M. Bastida, Louise Kellam, Joanne Graves, Lucy Jenner, Alison Campbell.  
*First cleavage orientation of the human embryo may be associated to a previous 'contact' with the zona pellucida (ZP):* Fertility 2018, Birmingham.

Kathryn Minshall, Audrey Wachter, Mercedes Regueira, Sue Montgomery, Alison Campbell. *A study of the morphokinetics of blastocysts affected by aneuploidies compatible with life:* Fertility 2018, Birmingham.

M. Regueira, L. Best, C. Drew, K. Jordan, L. Lee, E. Power, M. Sedler, S. Montgomery, A. Campbell. *Preimplantation genetic screening on previously untested frozen embryos*: Fertility 2018, Birmingham.  
Sam Rhodes, Mohammed Khairy, Lynne Nice, Rahnuma Kazem and Alison Campbell  
*Comparative Review of the use of artificial oocyte activation (AOA) in fresh ICSI cycles*: Fertility 2018, Birmingham.

Joanne Graves, Andrea Blair, Lucy Jenner, Alison Campbell. *Our experience of new andrology inter-laboratory controls as part of the quality management system*: Fertility 2018. Birmingham.

M Regueira, A Campbell, I Gallos, S Montgomery, L Jenner, A Wachter, S Wheat, F Foad, R Smith, L Nice, E Arm Fishel  
*Angle between first and second polar body is significantly associated with clinical outcome*: Alpha 2018, Reykjavik, Iceland

Louise best, Alison Campbell . *Advanced blastocyst development stage, at the time of vitrification, is associated with increased implantation, regardless of morphology*: Alpha 2018, Reykjavik, Iceland

Alison Campbell, Ioannis Gallos, Fatima Mirzazadeh, Best Louise, Rachel Smith, Samantha Duffy, Fiona Foad, Sarah Thirlby, Stacy Wheat, Sue Montgomery, Sarah O'boyle, Laina Davies. *A time-lapse study of pronuclear fading in 38,944 embryos, following IVF or ICSI. Is it time to fine-tune practice for standard assessment?* Alpha 2018, Reykjavik, Iceland.

## 2019

A Campbell, L Best, R Smith, K Berrisford, S Montgomery, A Wachter, S Wheat, F Foad, L Nice, E Armstrong, S Fishel. *Time lapse analysis of 1185 human blastocysts resulting in live birth to assess whether gender affects the timing of preimplantation embryo development*: Fertility 2019, January 2019, Birmingham, UK

George Woodhead, Louise Kellam, Alison Campbell, Maha Ragunath, Kanna Jayaprakasan. *Odds and predictors of Monozygotic Twinning in a multi-centre cohort of 25,794 IVF cycles*: ESHRE 2018

Lucy Jenner, Alison Campbell, Louise Kellam, Kathryn Berrisford, *Four years of day 4 embryo transfer*: Fertility 2019,

Caroline Rossiter, Ellen Armstrong, Alison Campbell. *Managing expectations of patients with a single oocyte collected – a retrospective analysis of outcomes*: Fertility 2019, Birmingham.

Sofia Tsagdi, Ellen Armstrong, Sue Montgomery and Alison Campbell. *Does intracytoplasmic sperm injection improve fertilisation rate and pregnancy outcome, compared with IVF, in patients with non-male factor infertility when 3 or fewer oocytes are retrieved?* Fertility 2019, Birmingham.

Alison Campbell; Louise best; Rachel Smith; Kathryn Berresford; Sue Montgomery; Audrey Wachter; Stacey Wheat; Fiona Foad; Lynne Nice ;Ellen Armstrong; Simon Fishel. *Time lapse analysis of 1185 human blastocysts resulting in live birth to assess whether gender affects the timing of preimplantation embryo development*: Fertility 2019, Birmingham.

## 2020

Margarida Avo Santos, Iria Castro, Alexandra Page, Amanda Tozer, Sue Montgomery, Alison Campbell  
*Can artificial oocyte activation using calcium ionophore improve blastulation rates in women with previous failed or low blastulation yield?* Fertility 2020, Edinburgh.

Campbell, Alison; Smith, Rachel; Best, Louise; Montgomery, Sue; Berrisford, Kathryn; Nice, Lynne; Armstrong, Ellen; Lodge, Yvonne; Page, Alex;  
Corcoran, Sharon; Drezet, Cath. *'Group culture': Embryology perspectives of working within a large cohesive group of IVF clinics*: Fertility 2020, Edinburgh.

Carmen Miralles Cuadrado, Fatima Mirzazadeh, Mohammed Khairy, Ellen Armstrong, Megan Lockwood, Lynne Nice, Louise Best, Alison Campbell. *Can blastocyst percentage re-expansion after warming be used to predict implantation potential and live birth outcome?* Fertility 2020, Edinburgh.

Rachel Smith, Alison Campbell. *Types of vacuolation, in the human preimplantation embryo and association with live birth:* Fertility 2020, Edinburgh.

Natalie Davis, Alison Campbell. *Cell fusion in the preimplantation human embryo is not associated with a significantly decreased live birth rate:* Fertility 2020, Edinburgh.

Ellen Armstrong, Alison Campbell. *Do we need a laser to perform biopsy for PGT-A?* Fertility 2020, Edinburgh.

Sue Montgomery, Alison Campbell. *Classification of embryos at the morula stage is highly correlated with live birth outcome:* Fertility 2020, Edinburgh.

Sarah Thirlby-Moore, Ellen Armstrong, Alison Campbell. *Which donor sperm bank will give me the best chance of success? – A multicentre, retrospective study:* Fertility 2020, Edinburgh.

Carmen Miralles, Alison Campbell. *Can blastocyst percentage of re-expansion after warming be used to predict implantation potential and live birth outcome?* Fertility 2020, Edinburgh.

Margarida Avo Santos, Iria Castro, Alexandra Page, Sue Montgomery, Alison Campbell. *Can artificial oocyte activation using calcium ionophore improve blastulation rates in women with previous failed or low blastulation yield?* Fertility 2020, Edinburgh.

#### **Thesis-related presentations by invitation (2011-2019), Alison Campbell**

- Billund, Denmark. Autumn 2011 EmbryoScope workshop  
First UK clinical results following EmbryoScope culture and a preliminary look at ploidy.
- Billund, Denmark. Autumn 2012 EmbryoScope workshop  
Retrospective data analysis – looking into ploidy and prediction
- Billund, Denmark. Spring 2014
  1. Use of the EmbryoScope™ time-lapse system to determine the real incidence of transient or aberrant phenomena in the human preimplantation embryo
  2. The EmbryoScope™ time-lapse system at CARE Fertility - impact on staff and patients
- London. Precongress lecture: ALPHA 2012  
Time lapse and morphokinetics
- Istanbul. Precongress lecture: ESHRE 2012  
Time lapse in the IVF laboratory.
- Precongress German embryology society 2012  
Adapting to life with the EmbryoScope, experiences and commercial implementation
- Istanbul. Precongress PGDIS 2013  
Use of the EmbryoScope in modeling a risk classification for aneuploidy in human embryos.
- Leipzig- German society of embryologists April 2013  
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- Innsbruck - Austrian society of embryologists September 2013  
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## Time lapse and embryo aneuploidy

- Rome – SIERR (Italian society of reproduction and embryology) annual conference. 7 Feb 2014 Are morphokinetics and other biomarkers of embryo quality clinically applicable?
- Canterbury PGDIS 2014  
Morphokinetics and Ploidy 30 April 2014
- Manchester Insights Oct 2013 How to get a beautiful embryo
- Paris Ovarian Club Nov 2014  
Laboratory aspects of time lapse imaging
- Catania UMR and HERA congress. July 2015  
Details of embryo development in time lapse monitoring, definition and nomenclature of morphokinetic parameters.
- Manchester RHG International congress October 2015 Enhancing knowledge, improving results!
- Rome. European Fertility Meeting. December 2015 Clinical value of embryo morphokinetic analysis
- Dundee. Scottish Embryologists' Meeting. June 2016  
EmbryoScope annotation.
- Antalya. Society of Reproductive Medicine and Surgery congress. October 2017. Utilisation of time lapse technology in the IVF lab: Pitfalls and benefits  
Standardisation of the IVF lab – debate.
- Cairo. Upper Egypt congress. February 2018  
Time lapse imaging and embryo selection. The CARE Fertility group experience. Technical aspects of embryo biopsy and optimizing lab practice for PGS.
- Antalya. Turkish Society of Reproductive Medicine 2018 Embryo selection using time lapse monitoring.
- Reykjavik. Alpha 12<sup>th</sup> biennial conference. May 2018. Time Lapse. Useful algorithms or just nice videos?
- ESHRE May 2018. A decade of time lapse imaging: Reflections & future possibilities, ESHRE pre-congress course.
- London. COGI. 26<sup>th</sup> World Congress. November 2018 Useful algorithms or just nice videos?
- London. Royal College of Nursing Forum conference. March 2019 EmbryoScope and the role of the embryologist
- Bologna. 9.baby symposium. October 2019.  
Time lapse technology is here to stay. And for good reason!

- Lisbon. International forum for artificial intelligence in IVF. November 2019