EXPERTS IN EGG HEALTH
Advancing Fertility Patient Care
Welcome

Michelle Dipp, M.D., Ph.D.
CEO, OvaScience
Various statements we make in this presentation concerning our future expectations, plans and prospects, including, without limitation, statements about our plans for the AUGMENT treatment and our two fertility treatments in development, as well as statements about our planned introduction of the OvaPrime treatment are forward-looking statements. Actual results may differ materially from those indicated by these forward-looking statements as a result of various important factors, including those risks more fully discussed in the “Risk Factors” section of our most recently filed Quarterly Report on Form 10-Q and/or Annual Report on Form 10-K. In addition, any forward-looking statements represent our views only as of today and should not be relied upon as representing our views as of any subsequent date. We do not assume any obligation to update any forward-looking statement.

The AUGMENT℠ treatment is not available in the United States.
<table>
<thead>
<tr>
<th>Topic</th>
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</thead>
</table>
| Welcome & Introduction                                       | Michelle Dipp, M.D., Ph.D.  
**CEO, OvaScience**                                                   |
| Advances in Fertility                                        | Professor Simon Fishel, Ph.D., FSB  
*Managing Director, CARE Fertility Group*  
Nottingham, UK                                                       |
| The Importance of Egg Health                                 | Dagan Wells, Ph.D.  
*Associate Professor, University of Oxford*  
*Director, Reprogenetics*  
Oxford, UK                                                            |
| Egg Precursor Cells and the AUGMENT<sup>SM</sup> Treatment    | Arthur Tzianabos, Ph.D.  
*President & Chief Scientific Officer, OvaScience*                   |
| Patient Experience with the AUGMENT Treatment – Canada       | Robert Casper, M.D., F.R.C.S.(C)  
*University of Toronto*  
*Medical Director, TCART Fertility Partners*  
Toronto, Ontario, Canada                                             |
| Patient Experience with the AUGMENT Treatment – Turkey       | Kutluk Oktay, M.D., F.A.C.O.G.  
*Consultant Physician, Gen-Art IVF*  
Ankara, Turkey                                                       |
| Patient Experience with the AUGMENT Treatment – UAE          | Michael Fakih, M.D.  
*Medical Director, Fakih IVF*  
Dubai, UAE                                                            |
| Summary of AUGMENT Patient Experience and Future Plans       | Arthur Tzianabos, Ph.D.                                                 |
| Q&A                                                          | All                                                                     |
Welcome to our International Colleagues

40+ Countries Represented
OvaScience: Building a Leading Fertility Company

OvaScience at a Glance


New Fertility Treatments

- AUGMENT℠ treatment launched
- OvaPrime℠ treatment introduction planned for end of 2015
- OvaTure℠ treatment in preclinical development

Proprietary Platform
Egg Precursor Cell Discovery and Opportunity

We always thought a woman was born with a set number of eggs that die over time.

Women have egg precursor cells in the protective ovarian lining that can mature into fresh, young, healthy eggs.

This discovery serves as the foundation for OvaScience’s new fertility treatments.
OvaScience Proprietary Fertility Treatments Designed to Improve Egg Health

- **Egg Precursor Cells**
  - Launched 2014
  - **AUGMENT SM**
    - Add energy to eggs
  - **OvaPrime SM**
    - Increase egg reserve
  - **OvaTure SM**
    - “Next-generation IVF”
      - No hormone injections
  - End of 2015 Introduction
  - In Development

OvaScience Proprietary Fertility Treatments
Designed to Improve Egg Health
Translating Innovative Science into Fertility Treatments

Aaron J.W. Hsueh, Ph.D.  
David Sinclair, Ph.D.  
Alan DeCherney, M.D.  
Erin Wolff, M.D.  
Evelyn Telfer, Ph.D.  
Jonathan Tilly, Ph.D.  
Dori Woods, Ph.D.  
Hugh Taylor, M.D.  
Justin St. John, Ph.D.
Advances in Fertility
What’s New in IVF?

Professor Simon Fishel, Ph.D., FSB
CARE Fertility Group
United Kingdom
Global Demand for Fertility Treatments is Growing

- Approximately 1.5 million \textit{in vitro} fertilization (IVF) cycles reported per year worldwide

- IVF has been in clinical practice for 35+ years

- Significant gains live birth rate; especially in good prognosis patients

- Repeated IVF failures still common
  - Many causes
  - Poor egg quality remains a major cause
37 Years of ART Births

**IVF: Beginning of a new era of assisted reproductive technology**

First IVF baby born in 1978 (UK)

First IVF baby born in US in 1981

Over 5 million IVF babies since 1978

2015 - First AUGMENT<sup>SM</sup> treatment baby in Toronto, Canada
IVF History: Examples of Innovative Treatments, Tests and Alternative Options

- 1978: IVF
- 1980: Donor Egg
- 1982: FET
- 1983: Ultrasound for egg collection
- 1987: PGD
- 1990: ICSI
- 1991: PGSv2
- 2008: AUGMENT
- 2014: 13

Pioneering Opportunities

• **ICSI**
  – Revolutionized male factor treatment; preserving paternal genetic inheritance

• **PGD and PGS, Imaging**
  – Selection of embryo(s) with highest probability of success

• **Donor Egg/Sperm, Surrogacy, Adoption**
  – When all else fails or is impossible

• **AUGMENT℠ Treatment**
  – A new era for preserving female genetic inheritance
Egg precursor cell mitochondria to improve egg and embryo quality

Egg precursor cells capable of developing into competent eggs \textit{in vivo}

Egg precursor cells matured \textit{in vitro} would eliminate need for COS and avoid OHS
Revolutionizing Treatment Through Egg Precursor Cells

• Redefining our understanding of female fertility

• The AUGMENT\textsuperscript{SM} treatment uses egg precursor cell mitochondria to improve egg health in women with poor egg quality
The Importance of Egg Health

Dagan Wells, Ph.D.
University of Oxford
Reprogenetics
United Kingdom
In vitro fertilization (IVF)

Worldwide only ~one-third of IVF cycles produce a pregnancy

85% of embryos transferred do not implant
despite transfer of morphologically normal embryos

Could genetic problems have a role in embryonic failure?
Chromosome abnormality (aneuploidy) is extremely common
Problem increases with advancing maternal age

Data from >50,000 embryos analyzed by Reprogenetics
Impact of embryo chromosome abnormality

Aneuploidy is almost always lethal (failed implantation/miscarriage)

While aneuploidy increases with age, implantation rate decreases

Data from >50,000 embryos analyzed by Reprogenetics
Aneuploidy is the most important factor in implantation failure.

Impact of embryo chromosome abnormality

Maternal age

Implantation rate

* SART, ** Harton et al. (2013) Fertil Steril, and Reprogenetics unpublished data
Impact of embryo chromosome abnormality

...and also in miscarriage

*MATERNAL AGE 0% 5% 10% 15% 20% 25% 30% 35% 40% <35 35-37 38-40 41-42

Miscarriage rate

Maternal age

No PGS *
PGS **

* SART, ** Harton et al. (2013) Fertil Steril, and Reprogenetics unpublished data
Origin of aneuploidy

The vast majority of blastocyst aneuploidy derives from the oocyte

Source of abnormality in aneuploid blastocysts

- Oocyte derived: 90%
- Sperm derived: 5%
- Post-fertilisation (mitotic): 20%

Excellent methods now available for detection of such aneuploidy (e.g. array-CGH, Next Generation Sequencing)
Other determinants of oocyte/embryo competence

Altered Levels of Mitochondrial DNA Are Associated with Female Age, Aneuploidy, and Provide an Independent Measure of Embryonic Implantation Potential

Elpida Fragouli1*, Katharina Spath2, Samer Alfarawati1, Fiona Kaper3, Andrew Craig4, Claude-Edouard Michel4, Felix Kokocinski4, Jacques Cohen5, Santiago Munne5, Dagan Wells1,2

2015
Mitochondria and oocyte/embryo viability

Evidence that aneuploidy is associated with increased mtDNA quantity. Mitochondrial defect or stress response?

Fragouli et al., 2015, PLOS Genetics
Mitochondria and oocyte/embryo viability

Evidence that aneuploidy is associated with increased mtDNA quantity. Mitochondrial defect or stress response?

Fragouli et al., 2015, PLOS Genetics
Mitochondria and oocyte/embryo viability

Euploid blastocysts with abnormal mtDNA levels do not implant

May explain one-third of implantation failures involving euploid embryos

Fragouli et al., 2015, PLOS Genetics
Example: patient 35 year old, blastocyst transfer

Euploid implanting

(40%)
Example: patient 35 year old, blastocyst transfer

- **Euploid implanting** (40%)
- **Euploid not implanting** - Unknown reason
- **Euploid not implanting** - Elevated mtDNA (8%)
- **Aneuploid** (35%)

PGS selection: 62% implantation

PGS + MitoGrade selection: 70% implantation *

* Expected
Mitochondria and oocyte/embryo viability

Changes in mitochondrial DNA level associated with:

- Reproductive senescence (female)
- Aneuploidy
- Non-viability of euploid blastocysts
Oocyte competence: other considerations

The oocyte does not mature in isolation

Is loss of viability an oocyte problem or a follicle issue?

Analysis of all expressed genes in cumulus cells (transcriptome)

Genes with low levels of expression

Genes with high levels of expression

Genes showing differential expression

Results suggest an impact of extrinsic factors

Fragouli et al., 2012
Improving embryo selection

Ever improving methods to assess embryo viability

Less harm to the oocyte/embryo of assisted reproductive techniques

but no way of improving the competence of oocytes to super-physiological levels

...so far

Technologies for intervention at oocyte or follicular levels becoming available
Scientists
Dagan Wells, PhD (UK)
Samer Alfarawati, PhD (UK)
Jonas Sarasa, PhD (UK)
Jacques Cohen, PhD (US)
Santiago Munné, PhD (US)
M. Konstantinidis, PhD (US)
Mireia Sandalinas, PhD (Spain)
Souraya Jaroudi, PhD (UAE)
J. Horcajadas, PhD (Latin Am.)
Luis Guzman, PhD (Peru)
Lauren Lansdowne, MSc (UK)
Sarah Taylor, MSc (UK)
Renata Prates (US)
Tomas Escudero (US)
N’Neka Goodall (US)
Sophia Tormasi (US)
Allen Kung (US)
Lia Ribustello (US)

Lab & Medical Directors
Elpida Fragouli, PhD (UK)
Pere Colls, PhD (US)
Carles Gimenez, PhD (Spain)
Karsten Held, MD (Germany)
Tetsuo Otani, MD (Japan)
Muriel Roche, PhD (Japan)
Braulio Peramo, MD (UAE)
Ahmed Yesilyurt, MD (Turkey)
Xuezhong Zeng, MD (China)
Francisco Rocha, PhD (Mexico)
Christian Alvarez Sedo, PhD (Argentina)

Embryologists
Kelly Ketterson
Catherine Welch
Tim Schimmel

Genetic Councilors
Jill Fischer
Amy Jordan
Erin Mills

dagan@reprogenetics.co.uk
Egg Precursor Cells and the AUGMENT℠ Treatment

Arthur Tzianabos, Ph.D.
President and Chief Scientific Officer
OvaScience
Egg Precursor Cells Supported by Large and Growing Body of Evidence

Multiple independent labs working with egg precursor cells

“I was skeptical at the time of the first publication on oogonial stem cells, or egg precursor cells, in 2004. Since that time, our understanding is so much greater and the ongoing work in my lab, as well as that of others, has shown that a population of cells with germline stem cell characteristics can be isolated from the adult human ovary and other non-human primates. We now need to concentrate on the potential of these cells rather than deny their existence.”

Evelyn Telfer, Ph.D., University of Edinburgh
Egg Precursor Cells are Difficult to Find and Isolate

- OvaScience proprietary monoclonal antibody identifies and isolates egg precursor cells from humans and animals
- Commercially available polyclonal antibody is non-specific and of poor quality

Nature 2004 428:145-150
Egg Precursor Cells
Mitochondria is a Key Factor in Egg Health

- Younger eggs have younger, healthier mitochondria
- Egg health is key factor in IVF success
- Poor egg/embryo quality can drive success rates significantly below average

AUGMENT™ Treatment Integrates into IVF Cycle

**Standard IVF Cycle**

- **Suitability**
  - Blood tests, age, past medical history

- **Ovarian Hyperstimulation**
  - Hormone injections

- **Egg Retrieval**

- **Egg Fertilization by ICSI** + **EggPC Mitochondria**

- **Embryo Culture and Transfer**

**AUGMENT Process**

- Ovarian tissue biopsy processed
- EggPC cells identified and isolated
- EggPC mitochondria isolated
Cumulative IVF Cycles vs. Per Cycle Success Rate: Live Births

Retrospective analysis of N > 10,000 patients
Average age = 35.7

*Live birth rate as reported by physicians

*Live birth rate as reported by physicians
AUGMENT℠ Patient Experience Approach

• Introduced to patients in same mode as ICSI, PGS and PGD

• Very poor prognosis patients selected by doctors for initial AUGMENT patient experience: <10% clinical pregnancy rate, 0-2% live birth rate

• Comparison to a woman’s IVF history, consistent with clinical practice

• Randomized, placebo-controlled trial design not feasible:
  – Unable to select proper controls; lack of agreement on criteria
  – Ethical concerns of including a placebo arm; enrollment challenges

• OvaScience Global Registry established to capture patient history and outcomes for retrospective analysis
Patient Experience with the AUGMENT℠ Treatment

Robert Casper, M.D., F.R.C.S.(C)
University of Toronto
TCART Fertility Partners
Canada
Mitochondrial Dilution During Embryo Development

Embryo Development

Day 0  Day 1  Day 2  Day 3  Day 5  Day 6
# Preclinical Support for Safety and Efficacy of Mitochondrial Transfer

<table>
<thead>
<tr>
<th>Species</th>
<th>Cytoplasm (Cyto) or Mitochondria (Mito) Transfer</th>
<th>Safe for Oocyte</th>
<th>Increased Fertilization Rate</th>
<th>Viable Blastocyst</th>
<th>Healthy Live Births</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Porcine</td>
<td>Cyto</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Not reported</td>
<td>El Shourbagy, et al., 2006</td>
</tr>
<tr>
<td>Bovine</td>
<td>Cyto and Mito</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Not reported</td>
<td>Chiaratti, et al., 2011 Ferreira, et al., 2010 Hua, et al., 2007</td>
</tr>
</tbody>
</table>
Human Proof of Concept Established with Heterologous Cytoplasmic Transfer

- Cytoplasmic transfer pioneered by Jacques Cohen
- Beneficial effect seen on embryo development
- Significant improvement in success rates with over 50 live births

Cohen et al, Mol Hum Reprod 1998
Egg Precursor Cell Mitochondria are Similar to Oocyte Mitochondria

- Egg precursor cells are unipotent germline cells in the outer cortex of the ovary

Human brain: [http://dx.doi.org/10.1093/brain/awu138](http://dx.doi.org/10.1093/brain/awu138), 2329-2345 2014
Human egg precursor cell: Harvard Medical School
Many Conditions are Prognostic for IVF Success/Live Birth

- Age
- Oocyte/embryo quality
- Antral follicle count
- Hormone levels: FSH (follicle stimulating hormone), AMH (anti-mullerian hormone)
- BMI (body mass index)
- Environmental factors
- Previous diagnoses: diminished ovarian reserve, endometriosis, etc.
- Previous failed IVF

Lack of agreement on how to rank significance of conditions
AUGMENTSM Patient Experience at TCART Fertility Partners
### Baseline Clinical Pregnancy Rate for AUGMENT™ Treatment Patients’ Prior IVF

<table>
<thead>
<tr>
<th>Metric</th>
<th>Previous IVF History Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>34</td>
</tr>
<tr>
<td>Average current age</td>
<td>36.0 (Range: 26-44)</td>
</tr>
<tr>
<td>Background/Diagnoses</td>
<td>Poor oocyte &amp; embryo quality with one of the following diagnoses: Diminished Ovarian Reserve, Ovulatory Dysfunction, Polycystic Ovarian Syndrome, Tubal Factor, Endometriosis, Unexplained</td>
</tr>
<tr>
<td>Total previous IVF cycles initiated</td>
<td>71</td>
</tr>
<tr>
<td>Average cycles per patient</td>
<td>2 (Range: 1-5)</td>
</tr>
<tr>
<td>Total previous embryo transfers</td>
<td>79</td>
</tr>
</tbody>
</table>

**Historical clinical pregnancy rate:**
- per cycle initiated: 11% (8/71)
- per embryo transfer: 10% (8/79)

**Historical live birth rate:**
- per cycle initiated: 1.4% (1/71)
- per embryo transfer: 1.3% (1/79)
# Patient Experience with AUGMENT™ Treatment

<table>
<thead>
<tr>
<th>Metric</th>
<th>AUGMENT</th>
</tr>
</thead>
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</tr>
<tr>
<td>Total AUGMENT cycles initiated</td>
<td>34</td>
</tr>
<tr>
<td>Average cycles per patient</td>
<td>1</td>
</tr>
<tr>
<td>Total embryo transfers</td>
<td>26</td>
</tr>
<tr>
<td>Clinical pregnancy rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>35% (12/34)</td>
</tr>
<tr>
<td>• per embryo transfer</td>
<td>46% (12/26)</td>
</tr>
<tr>
<td>Ongoing clinical pregnancy and live birth rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>26% (9/34) \textit{includes 1 live birth}</td>
</tr>
<tr>
<td>• per embryo transfer</td>
<td>35% (9/26) \textit{includes 1 live birth}</td>
</tr>
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</table>

9 patients have 23 total frozen embryos remaining for transfer
TCART Patient Experience with AUGMENT℠ Treatment

- **Total patients initiated treatment**: 34
- **Patients completed cycles with AUGMENT treatment**: 30
- **Patients with embryo transfers (3 had multiple transfers)**: 22
- **Number of embryo transfers**: 26
- **Positive pregnancy tests (confirmed by quantitative hCG)**: 15
- **Clinical pregnancies (confirmed by ultrasound)**: 12
- **Ongoing clinical pregnancies and live births****: 9

- 1 no sperm obtained, 1 no eggs retrieved, 2 egg banking
- 8 resulted in no transfer due to: no fertilization (3), arrested embryo development (4), pending frozen embryo transfer (1)
- (42 total transferred embryos)
- 3 chemical pregnancies*
- 3 spontaneous abortions

*Chemical pregnancy defined as not progressing to clinical pregnancy
**Includes 1 live birth
### Improved Pregnancy Rates Compared to Baseline with AUGMENT℠ Treatment

<table>
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<th>Previous IVF History</th>
<th>AUGMENT</th>
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<td>26</td>
</tr>
<tr>
<td>Clinical pregnancy rate per cycle initiated</td>
<td>11%</td>
<td>35%</td>
</tr>
<tr>
<td>Clinical pregnancy rate per embryo transfer</td>
<td>10%</td>
<td>46%</td>
</tr>
</tbody>
</table>
| Ongoing clinical pregnancies and live births (rate per cycle initiated) | 1%  
(No currently ongoing and 1 live birth) | 26%  
(9 including 1 live birth) |
<table>
<thead>
<tr>
<th></th>
<th>Age &lt; 35</th>
<th>Age 35-39</th>
<th>Age ≥ 40</th>
</tr>
</thead>
<tbody>
<tr>
<td># of cycles starts</td>
<td>6444</td>
<td>5992</td>
<td>3706</td>
</tr>
<tr>
<td>Clinical pregnancy rate / cycle start</td>
<td>38.2 %</td>
<td>31.5 %</td>
<td>18 %</td>
</tr>
<tr>
<td>Live birth rate / cycle start</td>
<td>31.2 %</td>
<td>23.4 %</td>
<td>10.3 %</td>
</tr>
<tr>
<td>Live birth rate / embryo transfer</td>
<td>38.4 %</td>
<td>28.8 %</td>
<td>13.8 %</td>
</tr>
<tr>
<td>Percent single embryo transfer</td>
<td>57.8 %</td>
<td>39.6 %</td>
<td>24.1 %</td>
</tr>
<tr>
<td>Multiple Birth Rate</td>
<td>16.8%</td>
<td>16.4 %</td>
<td>15.2 %</td>
</tr>
</tbody>
</table>
Conclusion

- Patient experience with the AUGMENT™ treatment continues to demonstrate improved pregnancy rates
  - Nine ongoing clinical pregnancies, including one live birth
  - Ongoing clinical pregnancy rate of 26% per cycle initiated and 35% per embryo transfer (versus prior IVF live birth rate of 1% for both)

- Women included in this patient experience were poor prognosis for live birth
  - Failed previous IVF cycles, poor embryo development, 11% clinical pregnancy rate and 1.4% live birth rate per previous cycle

- Nine patients have 23 frozen embryos remaining for transfer
Acknowledgments

TCART Clinical
- Dr. Yaakov Bentov
- Dr. Paul Chang
- Dr. Dan Nayot
- Deborah Myers
- Caroline Lux

First Steps
- Dr. Marjorie Dixon
- Dr. Fay Weisberg

TCART Lab
- Dr. Navid Esfandiari
- Dr. Julia Szeptycki
- Dennis De la Cruz
- Khalid Rao
- Milena Vankova
Patient Experience with the AUGMENT℠ Treatment

Kutluk Oktay, M.D., F.A.C.O.G.
Professor of OB/GYN, Cell Biology & Anatomy, Medicine, and Pathology
Gen-Art IVF
Turkey
and New York Medical College, NY, USA
Mitochondria: Battery for the Living

- Multicopy genome, circular ds-DNA molecule*
- Codes for 13 essential subunits of the respiratory chain complexes**
- Maternally-inherited
- 10x more prone to DNA damage

*Anderson et al., 1981
**Wallace, 1992
Mitochondria Health is Important for Reproduction
Age-Related Changes in Oocyte Mitochondria

- Reduced numbers*
- Reduced mitochondria in oocytes that failed to fertilize**
- Morphological changes***
- Increased mtDNA deletions****

*Iwata et al 2011-cows, Kushnir et al 2012-mice
**Reynier et al Hum Reprod 2001
Egg Precursor Cell-Derived Mitochondria Produce More ATP than Other Stem Cells and Ovarian Somatic Cells

Mitochondria Have Numerous Vital Functions

- Redox functions
- Oxygen sensing
- Fatty-acid oxidation (B-oxidation)
- Calcium hemostasis
- Cell signaling
- Programmed cell death

Van Blerkom J Mitochondrion 2011
AUGMENT™ Patient Experience at Gen-Art IVF
INTRODUCTION: Mitochondrial dysfunction has been suggested as a major cause of age-induced decline in oocyte quality. In the past, cytoplasmic transfer from donor oocytes to aged oocytes showed some success but was abandoned due to the concerns with heteroplasmy. Recent studies indicated presence of oogonial precursor cells (OPC) in the human ovary, which could be an autologous source of “healthy mitochondria”. Our objective was to investigate the clinical efficacy of OPC-derived autologous mitochondrial injection (AMI) to improve oocyte quality.

METHODS: Laparoscopic ovarian cortical biopsies were obtained from 8 women aged 27-41 (mean 34.6±4.5) with ≥3 IVF failures and poor oocyte/embryo quality. OPCs were isolated by cell sorting using a proprietary monoclonal anti-DDX antibody. OPCs were then disrupted and mitochondria were isolated. Reconstituted mitochondria were injected into each oocyte during ICSI. Pared comparisons were made between the first as well as the mean of all failed cycles and the post AMI cycle.

RESULTS: Patients were older as compared to when they had failed IVF cycles, and expectedly produced fewer oocytes post-AMI. The fertilization rates improved significantly post AMI, however, the improvement in embryo grading was not statistically significant. Of the 8 women undergoing embryo transfer (ET), two conceived at the ages of 34 and 41, with a pregnancy rate of 25%. Interestingly, both pregnancies were from single frozen embryo transfers (FET) following 7 and 3 IVF failures, respectively, one had been tested by aCGH and found to be euploid. While the latter pregnancy resulted in a first trimester loss, the former is ongoing at 31st week of gestation.

CONCLUSIONS: These data show encouraging results for OPC-derived AMI, despite the older age at the time of the treatment when compared to the previous failed IVF cycles. These include a significant improvement in fertilization rates, and pregnancies after single embryo transfers.

Table 1: Patient Characteristics and Cycle Outcomes

<table>
<thead>
<tr>
<th>n=8</th>
<th>Pre-AMI: All cycles</th>
<th>Pre-AMI: 1st cycle</th>
<th>Post-AMI</th>
<th>P (a vs c)</th>
<th>P (b vs c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>29.8±5.8</td>
<td>31.1±5.4</td>
<td>34.6±4.5</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>N of oocytes</td>
<td>14.2±5.4</td>
<td>12.5±5.5</td>
<td>7.7±3.1</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>N of mature oocytes</td>
<td>11.3±4.9</td>
<td>10.8±4.9</td>
<td>6.1±3.2</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>2PN embryos</td>
<td>6.0±5.8</td>
<td>5.6±4.4</td>
<td>4.2±1.9</td>
<td>0.39</td>
<td>0.31</td>
</tr>
<tr>
<td>Fertilization rate (%)</td>
<td>48.3±36.3</td>
<td>51.5±27.0</td>
<td>77.5±21.1</td>
<td>0.06</td>
<td>0.03</td>
</tr>
<tr>
<td>D3 embryo grade</td>
<td>1.95±1.29</td>
<td>1.71±0.57</td>
<td>1.56±0.46</td>
<td>0.24</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Fig.1 Pre (a,c) and post-AMI (b,d) embryo development of pregnant patients. First (b) is ongoing at 31st week of gestation and the second (d) resulted in a first trimester pregnancy loss.

CONCLUSIONS

These data show encouraging results for OPC-derived AMI, despite the older age at the time of the treatment when compared to the previous failed IVF cycles. These include a significant improvement in fertilization rates, and pregnancies after single embryo transfers.
16 patients with ≥2 IVF failures

- 2 excluded due to lack of prior IVF outcomes

14 underwent COH

- 3 excluded because of oocyte freezing/pooling

11 intended cycles

- 2 cancellation (1 arrest at 2PN, 1 aneuploidy after PGS)

9 underwent ET

- 9 underwent ET

  - 3 with PGS
    - 1 live birth, 1 pregnancy loss
  
  - 6 without PGS
    - 1 pregnancy loss

COH – controlled ovarian hyperstimulation
Pre-AUGMENT™ (first failed) vs. Post-AUGMENT Cycle Outcome Comparisons

Mean number

Outcome

Error Bars: 95% CI
Pre-AUGMENT\textsuperscript{SM} (all failed) vs. Post-AUGMENT Cycle Outcome Comparisons

![Bar chart showing comparisons between pre- and post-AUGMENT cycle outcomes.]

- **Outcome**
  - Age
  - Mature oocyte
  - Fertilization rate
  - 2PN
  - Embryo Grading

- **Error Bars**: 95% CI

- **Significance Levels**
  - Age: p=0.01
  - Fertilization rate: p=0.05
  - Embryo Grading: p=0.12

- **Legend**
  - pre-all
  - post
Improvement in Embryo Morphology

34 y.o.  
7 IVF Failures

41 y.o.  
3 IVF Failures
## Prior IVF Pregnancy Rates for AUGMENT<sup>SM</sup> Treatment Patients

<table>
<thead>
<tr>
<th>Metric</th>
<th>Previous IVF History Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>11</td>
</tr>
<tr>
<td>Average current age</td>
<td>35.2 (Range: 27-46)</td>
</tr>
<tr>
<td>Background/Diagnoses</td>
<td>Diminished reserve and/or gamete/embryo quality</td>
</tr>
<tr>
<td>Total previous IVF cycles initiated</td>
<td>41</td>
</tr>
<tr>
<td>Average cycles per patient</td>
<td>3.7 (Range: 2-7)</td>
</tr>
<tr>
<td>Total previous embryo transfers</td>
<td>40</td>
</tr>
</tbody>
</table>

**Historical clinical pregnancy rate:**
- per cycle initiated: 0% (0/41)
- per embryo transfer: 0% (0/40)

**Historical live birth rate:**
- per cycle initiated: 0% (0/41)
- per embryo transfer: 0% (0/40)
# Patient Experience with AUGMENT<sup>SM</sup> Treatment

<table>
<thead>
<tr>
<th>Metric</th>
<th>AUGMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>11</td>
</tr>
<tr>
<td>Average current age</td>
<td>35.2 (Range: 27-46)</td>
</tr>
<tr>
<td>Background/Diagnoses</td>
<td>Diminished reserve and/or gamete/embryo quality</td>
</tr>
<tr>
<td>Total cycles initiated</td>
<td>11</td>
</tr>
<tr>
<td>Average cycles per patient</td>
<td>1</td>
</tr>
<tr>
<td>Total embryo transfers</td>
<td>9</td>
</tr>
<tr>
<td>Clinical pregnancy rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>27% (3/11)</td>
</tr>
<tr>
<td>• per embryo transfer</td>
<td>33% (3/9)</td>
</tr>
<tr>
<td>Live birth rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>9% (1/11)</td>
</tr>
<tr>
<td>• per embryo transfer</td>
<td>11% (1/9)</td>
</tr>
</tbody>
</table>
### Improved Pregnancy Rates Compared to Baseline with AUGMENT℠ Treatment

<table>
<thead>
<tr>
<th></th>
<th>Previous IVF History</th>
<th>AUGMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cycles initiated</td>
<td>41</td>
<td>11</td>
</tr>
<tr>
<td>Average cycles initiated per patient</td>
<td>3.7</td>
<td>1</td>
</tr>
<tr>
<td>Total embryo transfers</td>
<td>40</td>
<td>9</td>
</tr>
<tr>
<td>Clinical pregnancy rate per cycle initiated</td>
<td>0%</td>
<td>27%</td>
</tr>
<tr>
<td>Clinical pregnancy rate per embryo transfer</td>
<td>0%</td>
<td>33%</td>
</tr>
<tr>
<td>Ongoing clinical pregnancies and live births (rate per cycle initiated)</td>
<td>0% (No currently ongoing and 0 live birth)</td>
<td>9% (1 live birth)</td>
</tr>
</tbody>
</table>
### Case Study #1

**Patient age: 41 – Diminished Ovarian Reserve**

<table>
<thead>
<tr>
<th>Previous IVF Cycles</th>
<th>AUGMENT™ Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td># of IVF Cycles</td>
<td>Number of Eggs Retrieved</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Previous Pregnancies*</td>
<td>Number of Eggs Fertilized</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Previous IVF Live Births</td>
<td>Number of Embryos Transferred</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

+Pregnancy Test: Yes  
Ongoing: No

*Includes chemical and clinical pregnancies*
## Case Study #2

### Patient age: 32 - Unexplained Infertility

<table>
<thead>
<tr>
<th>Previous IVF Cycles</th>
<th>AUGMENT&lt;sup&gt;SM&lt;/sup&gt; Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td># of IVF Cycles</td>
<td>Number of Eggs Retrieved</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Previous Pregnancies&lt;sup&gt;*&lt;/sup&gt;</td>
<td>Number of Eggs Fertilized</td>
</tr>
<tr>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Previous IVF Live Births</td>
<td>Number of Embryos Transferred</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Number of Embryos Frozen</td>
</tr>
<tr>
<td></td>
<td>3 euploid</td>
</tr>
<tr>
<td></td>
<td>+Pregnancy Test</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

<sup>*</sup>Includes chemical and clinical pregnancies
## Case Study #3

**Patient age:** 34 – Diminished Ovarian Reserve

<table>
<thead>
<tr>
<th>Previous IVF Cycles</th>
<th>AUGMENT\textsuperscript{SM} Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td># of IVF Cycles</td>
<td>Number of Eggs Retrieved</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Previous Pregnancies*</td>
<td>Number of Eggs Fertilized</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Previous IVF Live Births</td>
<td>Number of Embryos Transferred</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Live Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Includes chemical and clinical pregnancies
Acknowledgments

- Murat Sonmezer, M.D., Professor, Ankara University
- Volkan Baltaci, M.D., Professor, Gen-Art IVF Center, Ankara
- Aysun Baltaci, M.D., Gen-Art IVF Center
- Sertac Sen, M.D., Gen-Art IVF Center
- Volkan Turan, M.D., Gen-Art IVF Center, Ankara and New York Medical College
Patient Experience with the AUGMENT℠ Treatment

Michael Fakih, M.D.
Fakih IVF
UAE
Fakih IVF Clinic Overview

- 90% international patient base
- All fresh cycles (embryo freezing not allowed in UAE)
- Difficult-to-treat infertile couples with multiple failed IVF procedures
- Array CGH on all AUGMENT\textsuperscript{SM} treatment patients
- Average age: 37.3 years
AUGMENT™ Patient Experience at Fakih IVF
Fakih Patient Experience with AUGMENT™ SM Treatment

- **AUGMENT initiated cycles**: 60
  - 56 of 60 fertilized with successful embryo development
  - 22 resulted in no transfer due to:
    - PGD results (14)
    - Abnormal fertilization (2)
    - Arrested embryo development (6)

- **Patients with embryo transfers**: 34

- **Number of embryo transfers**: 34 (55 total transferred embryos)

- **Positive pregnancy tests (confirmed by quantitative hCG)**: 17 (50%)
  - 4 chemical pregnancies*

- **Clinical pregnancies (confirmed by ultrasound)**: 13 (38%)
  - 2 spontaneous abortions

- **Ongoing clinical pregnancies**: 11 (32%)

*Chemical pregnancy defined as positive pregnancy test
Baseline Clinical Pregnancy Rate for AUGMENT℠ Treatment Patients’ Prior IVF

<table>
<thead>
<tr>
<th>Metric</th>
<th>Previous IVF History Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>59</td>
</tr>
<tr>
<td>Average current age</td>
<td>37.3 (Range: 20-48)</td>
</tr>
<tr>
<td>Background/Diagnoses</td>
<td>Poor oocyte &amp; embryo quality: Diminished Ovarian Reserve Ovulatory Dysfunction Severe Male Factor</td>
</tr>
<tr>
<td>Total previous IVF cycles initiated</td>
<td>257</td>
</tr>
<tr>
<td>Average cycles per patient</td>
<td>4.3 (Range: 2-13)</td>
</tr>
<tr>
<td>Total previous embryo transfers</td>
<td>Unknown due to international patient base</td>
</tr>
<tr>
<td>Historical clinical pregnancy rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>4% (9/257)</td>
</tr>
<tr>
<td>Historical live birth rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>2% (4/257)</td>
</tr>
</tbody>
</table>
# Pregnancy Rates with AUGMENT℠ Treatment

<table>
<thead>
<tr>
<th>Metric</th>
<th>AUGMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>59</td>
</tr>
<tr>
<td>Average current age</td>
<td>37.3 (Range: 20-48)</td>
</tr>
<tr>
<td>Background/Diagnoses</td>
<td>Poor oocyte &amp; embryo quality: Diminished Ovarian Reserve Ovulatory Dysfunction Severe Male Factor</td>
</tr>
<tr>
<td>Total AUGMENT cycles initiated</td>
<td>60</td>
</tr>
<tr>
<td>Average cycles per patient</td>
<td>1</td>
</tr>
<tr>
<td>Total embryo transfers</td>
<td>34</td>
</tr>
<tr>
<td>Positive pregnancy rate</td>
<td>50% (17/34)</td>
</tr>
<tr>
<td>Clinical pregnancy rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>22% (13/60)</td>
</tr>
<tr>
<td>• per embryo transfer</td>
<td>38% (13/34)</td>
</tr>
<tr>
<td>Ongoing clinical pregnancy rate:</td>
<td></td>
</tr>
<tr>
<td>• per cycle initiated</td>
<td>18% (11/60)</td>
</tr>
<tr>
<td>• per embryo transfer</td>
<td>32% (11/34)</td>
</tr>
</tbody>
</table>
# Case Study #1

**Patient age: 37 – Female Factors, Poor Embryo Quality and Division**

<table>
<thead>
<tr>
<th>Previous IVF Cycles</th>
<th>AUGMENT&lt;sup&gt;SM&lt;/sup&gt; Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous # of IVF Cycles</td>
<td>Number of Eggs Retrieved</td>
</tr>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Previous Pregnancies*</td>
<td>Number of Eggs Fertilized</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Previous IVF Live Births</td>
<td>Number of Embryos Transferred</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Positive Pregnancy Test</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Includes chemical and clinical pregnancies*
## Case Study #2

### Patient age: 40 – Female Factors, Fibroids, Poor Egg Reserve, Low AMH

<table>
<thead>
<tr>
<th>Previous IVF Cycles</th>
<th>AUGMENT&lt;sup&gt;SM&lt;/sup&gt; Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous # of IVF Cycles</td>
<td>Number of Eggs Retrieved</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Previous Preganacies*</td>
<td>Number of Eggs Fertilized</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Previous IVF Live Births</td>
<td>Number of Embryos Transferred</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Positive Pregnancy Test</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Includes chemical and clinical pregnancies
# Case Study #3

**Patient age:  38 – Poor Embryo Quality and Division, Severe Male Factor**

## Previous IVF Cycles

<table>
<thead>
<tr>
<th>Previous IVF Cycles</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous # of IVF Cycles</td>
<td>5</td>
</tr>
<tr>
<td>Previous Pregnancies*</td>
<td>1</td>
</tr>
<tr>
<td>Previous IVF Live Births</td>
<td>0</td>
</tr>
</tbody>
</table>

## AUGMENT<sup>SM</sup> Treatment

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Eggs Retrieved</td>
<td>9</td>
</tr>
<tr>
<td>Number of Eggs Fertilized</td>
<td>3</td>
</tr>
<tr>
<td>Number of Embryos Transferred</td>
<td>1</td>
</tr>
<tr>
<td>Positive Pregnancy Test</td>
<td>Yes</td>
</tr>
<tr>
<td>Ongoing</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Includes chemical and clinical pregnancies*
Improved Pregnancy Rates Compared to Baseline with AUGMENT™ Treatment

<table>
<thead>
<tr>
<th></th>
<th>Previous IVF History</th>
<th>AUGMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cycles initiated</td>
<td>257</td>
<td>60</td>
</tr>
<tr>
<td>Average cycles initiated per patient</td>
<td>4.3</td>
<td>1</td>
</tr>
<tr>
<td>Total embryo transfers</td>
<td>Unknown</td>
<td>34</td>
</tr>
<tr>
<td>Clinical pregnancy rate per cycle initiated</td>
<td>4%</td>
<td>22%</td>
</tr>
<tr>
<td>Clinical pregnancy rate per embryo transfer</td>
<td>---</td>
<td>38%</td>
</tr>
<tr>
<td>Ongoing clinical pregnancies and live births (rate per cycle initiated)</td>
<td>2% (No currently ongoing and 4 live births)</td>
<td>18% (11 ongoing)</td>
</tr>
</tbody>
</table>
Conclusion

• Patient experience with the AUGMENT\textsuperscript{SM} treatment demonstrates improved pregnancy rates
  – Eleven ongoing clinical pregnancies
  – Ongoing clinical pregnancy rate of 18% per cycle initiated and 32% per embryo transfer (versus prior IVF live birth rate of 2%)

• Women included in this patient experience were poor prognosis for live birth
  – Failed previous IVF cycles, poor embryo development, 4% clinical pregnancy rate and 2% live birth rate per previous cycles

• All fresh cycles
Acknowledgments

• OvaScience Team
• Colleen Burgess, ELD, TS(ABB)
  – Global Head of Clinical Embryology
• Mohamad El Shmourey MSc, ELD, TS(ABB)
  – IVF Lab Director, Dubai
• Dr. Ahmad Fakih
  – Specialist Obstetrics & Gynaecology
• Monika Chawla, MD
• Sarah Lyndon, BSc Nursing
  – ACE Coordinator, Dubai
• Ciara Nother, BSc, Nursing
  – ACE Coordinator, Abu Dhabi
Summary of AUGMENT℠
Patient Experience
and
Future Plans

Arthur Tzianabos, Ph.D.
President and Chief Scientific Officer, OvaScience
## Summary of AUGMENT<sup>SM</sup> Experience in Patients

<table>
<thead>
<tr>
<th>Country</th>
<th>Patient History</th>
<th>Previous Clinical Pregnancy Rate per Initiated Cycle</th>
<th>Clinical Pregnancy Rate per Initiated AUGMENT Cycle</th>
<th>Clinical Pregnancy Rate per AUGMENT Embryo Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Average age: 36.0</td>
<td>11%</td>
<td>35%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>1-5 prior IVF cycles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>Average age: 37.3</td>
<td>4%</td>
<td>22%</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>2-13 prior IVF cycles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>Average age: 35.2</td>
<td>0%</td>
<td>27%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>2-7 prior IVF cycles</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9 patients with frozen embryos remaining for transfer

Data represents a point in time and does not reflect all patients in AUGMENT treatment

N > 100 AUGMENT cycles

Note: Physician-reported patient experience
OvaScience Global Registry

- First-of-its-kind multi-national IVF Registry for collection of patient experiences from all clinics

- Designed to evaluate the benefits of the AUGMENT\textsuperscript{SM} treatment, and expand to include the OvaPrime\textsuperscript{SM} and OvaTure\textsuperscript{SM} treatments, for multiple patient types

- Total data points collected per patient is >200 and encompasses the entire experience from prior IVF history to 12 months post-live birth. Key data points include:
  - Egg and embryo quality
  - Fertilization rates
  - Pregnancy/live birth outcomes

- Plan for statistical analysis of data collected for future publication
Summary

• AUGMENT℠ treatment continues to demonstrate improvement in pregnancy rates in women with very poor prognoses, including poor egg health and embryo quality

• AUGMENT patient experience is similar between the different clinics offering the AUGMENT treatment

• Availability of the AUGMENT treatment will be expanded to additional key geographies

• OvaScience has launched the first Global IVF Registry to collect patient experience data for retrospective analysis
Thank you

Questions?