

# e-news

News & Events for  
Poultry Producers from

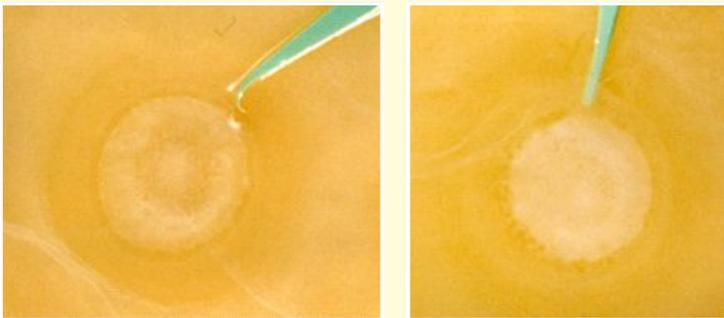
**ChickMaster**

## Embryonic Development of the Chick

**Dr. Michael J. Wineland, Professor, Poultry Science**

The following article is the first of a series based on a recent presentation by Dr. Wineland at the ChickMaster Avida Academy.

As a hatchery manager or operator, it is important to understand what normal embryonic development is and what is happening inside your eggs. The freshly laid egg has already been incubated approximately 24 hours as the internal body temperature of a hen is about 41°C (106°F). So as a result the freshly laid fertile egg has an embryo of 60,000 to 80,000 cells. It is also important to realize that we are working with biology and that means we work with variation. Thus not all eggs laid will have an embryo at the exact same stage of development. The typical embryo stage at the time an egg is laid is Stage EG 10 although there will be some at a lesser stage of development and some at a greater stage of development.



**Pictured (left) is an unincubated egg that is fertile and laid at a stage (EG 10) that is typically found at lay (oviposition). The picture on the right is an earlier stage of development but typically seen at a lesser frequency.**

Once the egg is laid it will continue to develop but the development rate is dependent upon the temperature of the egg. You never want to stop development (or they die) when eggs are stored, you should always have development, and during egg storage development is just at a reduced rate. It is also important to realize that if

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## We want to **ROCK** you!

The new **Rock Control** will be introduced at the EuroTier exhibition. After extensive testing and development, the **Rock** is now available for Avida Symphony setters and hatchers. New features include:



-  **Integrated control and larger touch screen with improved graphics**
-  **Proven better performance**
-  **Simpler management and maintenance**
-  **New temperature sensing technology**
-  **Another step forward to having a *Hatchery in Harmony***

Come to see the **Rock** at the EuroTier in Germany, IPPE in Atlanta and VIV Bangkok exhibitions.

## ChickMaster Hosts Avida Academy in Medina Factory

As part of ChickMaster's commitment to training, we extend an invitation to recent customers that invest in Avida single stage incubation systems to attend the Avida Single Stage Academy held in Medina, Ohio USA. This year we had 17 attendees from five different countries from all over the world coming to Medina, Ohio. The first day was held off-site and started with presentations by ChickMaster hatchery specialists and Dr. Mike Wineland. The program included



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## Embryonic Development of the Chick

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development of the embryo advances too far before being placed into storage it reduces viability of the embryo. Additionally, excessive storage times will decrease viability. If eggs are to be stored for longer periods (>7 days) then cooler temperatures 13°C (55°F) are typically used to help maintain viability. Some people use a procedure that will warm the eggs either prior to storage or during storage to help maintain viability of long stored eggs.

### Incubation is all about nutrition, providing the needed nutrients at the proper time of development

As an incubationist you influence through incubator management which nutrients are supplied to the embryo and how they are utilized. The nutrients are those found in the shell, yolk, albumen and the air surrounding the egg. All nutrients but oxygen are packed into the egg by the hen. How much of the nutrients found in the egg depends upon hen age, gut health, amount of feed provided to the hen and the nutrient levels in the feed.

As incubation starts there will be multiplication of cells and a sheet of white cells start to spread over the surface of the yolk, some which will be embryo and the rest will be the beginnings of extra-embryonic membranes. How fast the cell number increase will be dependent upon the incubation temperature as temperature drives the rate of development and secondly by the length of egg storage. Eggs which have been stored for a long period of time will either start development late or develop at a slower rate. Additionally, during this initial period of development there is movement of water across the yolk's vitelline membrane from the albumen and into the yolk. This results in the formation of sub-embryonic fluid (SEF) in the upper part of the yolk just beneath the embryo. It has been shown that there is need for a certain amount of SEF to form in order for the embryo to maintain viability. The amount of SEF formed has been shown to be influenced by turning. When the water moves across the vitelline (yolk membrane) membrane there are changes in the specific gravity of both the yolk and albumen. The changes in specific gravity will result in the yolk floating to the top of the egg (near shell surface) and the albumen will sink to the bottom of the egg. When dampers are closed as they are in the single stage setter there will be a very uniform environment in the incubator cabinet which will get all embryos off to a good start which will help with a smaller hatch window.

Late day 2 embryonated eggs will start to show blood islands forming and by day 3 blood vessels of the yolk sac membrane can be observed. These blood vessels will eventually surround the yolk, carrying nutrients to the embryo and will also be the initial respiratory surface for the embryo. Turning will influence the formation of this yolk sac membrane. Around day four, the size of the embryo noticeably increases and will shortly start to require more oxygen and we will start to see the heat production by the embryo increase as a result of this increasing oxygen consumption. In the subsequent article, I will be addressing what happens in the following days as the embryo continues to develop and grow.

## ChickMaster Hosts Avida Academy

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topics on embryology, utilization of the tools and features of the Avida systems, management of hatchery ventilation, and general troubleshooting. Day 2 was held at the factory giving the group an idea of how the process works in making the equipment, getting it to the hatchery, and then assembling the components to put the equipment into excellent working condition. There were more classroom sessions and hands-on training for control and Maestro software that are important tools in gathering information and managing hatchery results. A good part of the day reviewed basic maintenance and equipment operation.



*Dr. Mike Wineland leading the breakout session at a local hatchery*

### Day three was a hands-on day visiting a local hatchery

The program included a walk-thru of a hatchery followed by an egg breakout session lead by Dr. Wineland as well as Dr. Carolina Diaz and Chad Daniels of ChickMaster. It is always one of the most important and appreciated sessions of the Academy to learn about embryo development and how to evaluate hatch issues by looking at the embryos and egg shells. We thank our hosts, Gerber Poultry, for allowing the Academy students to visit this excellent and well run hatchery.

During the three day Academy there was also social time for all to meet and get to know a group of people that all came together with the similar purpose of learning. This event is very important for our customers and for all that attend. It is a great opportunity for learning for those that attend as well as those that organize and present during the week. ChickMaster is proud to host this event and will continue to organize and expand the Academy in the future.



**EuroTier** 15-18 Nov  
2016

**We invite you to come to our booth located in Hall 02, Stand D40 to meet with us. See the Avida Symphony, Rock control, Aria & CC3 Ventilation & Energy Management Systems & more! We want to work with you to have a Hatchery in Harmony.**

# GeMeric 3

## The Best Control Upgrade Yet!

After many months of development and testing, ChickMaster is proud to introduce the new **GeMeric 3**, the next generation of GeMeric control upgrades. With thousands of the GeMeric 1 & 2 models in operation, the GeMeric 3 integrates the benefits of its predecessors and adds many new features:

- ✓ **Designed to be installed inside the existing control box for one and two-zone controllers**
- ✓ **5.7 inch (14.5 cm) color touchscreen with simple icon navigation**
- ✓ **More precise temperature control with PID control loops**
- ✓ **Ten-stage programming capability (great for hatcher management)**
- ✓ **Fan and turn failure detection and alarm**
- ✓ **Greater security features**
- ✓ **On-screen graphing**
- ✓ **Connectable to Advisor, Maestro, and Oralarm**
- ✓ **Hatcher fumigation control**
- ✓ **And more....**

The GeMeric 3 is the best solution yet to upgrade older controls that still use mercury thermostats. Gain the benefits of more efficient control, reduced energy consumption, and better hatchability & chick quality. With the new benefits, the GeMeric 3 is also an upgrade for setters and hatchers that have GeMeric 1 controls! This includes controls for competitors' setters and hatchers as well. The GeMeric 3 will make any hatchery one step closer to having a *Hatchery in Harmony*.

**Ask your ChickMaster Sales Representative about the GeMeric 3 and come see it at the Atlanta IPPE in January 2017**



## CM Parts Corner: Probes on Setters and Hatchers

Maintaining and replacing probes are vital to achieving a *Hatchery in Harmony*. But how do you know when it is time to replace a temperature or humidity probe?

Probe calibration should be checked at regular intervals and at least every six months, if not more frequently. Calibration can be checked easily using the ChickMaster **Resonance Calibration Tool** which uses wireless Bluetooth technology to simplify the calibration process, in conjunction with any handheld Android operating device. The Resonance replaces the old wired calibration kit and can check up to eight probes to allow multiple machine calibration. Unlike a mercury thermostat that shows when it is no

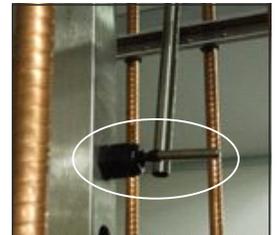
longer usable, a probe cannot display when it is time to be changed. Probes should be replaced after 5 years of service or when the calibration offset gets above 1.0°F (0.6°C). When the calibration offset gets above 1.2°F (0.7°C) the setter or hatcher will cause an alarm condition because the temperatures are not near the set points. For proper replacement, probes should be ordered for the required length and wiring should not be spliced.

**Knowing when it is time to replace a probe can make a very positive difference in your hatch results and chick performance. Please contact your local sales manager or sales representative for more information.**

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Gen IV	X	X	X	X	X	X	X					
Gemic 1					X			X				
Gemic 2								X	X	X		
Ultra											X	X



Resonance Calibration Tool



Probe in Avida Setter

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