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## 96-hour study of FU graft “out-of-body” survival comparing saline to Hypothermosol/ATP solution

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### Introduction

The original intention for this study was to repeat Dr. Bobby Limmer’s 1992 study that looked at graft survival over a period of time after harvesting,<sup>1</sup> but, in addition, to add two more days to the study time frame. Dr. Jerry Cooley persuaded me to add parallel study boxes with grafts stored in Hypothermosol solution with ATP added, to go along with the grafts stored in chilled normal saline (as per Limmer’s study). Grafts were placed in the two study boxes at the following time points: 2 hours, 4 hours, 6 hours, 8 hours, 24 hours, 48 hours, 72 hours, and 96 hours out of body. A hair count of all boxes was performed at 11.2 months.

### Materials and Methods

A 49-year-old Norwood VI male, who had a few scattered residual hairs on the top of his head, was chosen for the study. He had a heart attack at age 33 with a subsequent bypass procedure He is currently well, a non-smoker, and not on hair loss medication. Sixteen separate 1.1cm×1.1cm study boxes were marked off (Figure 1). A total of 28 “native” hairs were present in these boxes and were later subtracted when doing the final count. In each box, ten 1-hair FU grafts and twenty 2-hair FU grafts were placed in 0.8mm and 1.0mm slit sites, respectively, by our most experienced technician, who has 18 years of experience (Figure 2). The corners of each box were tattooed and a 1.2mm-wide “moat” of bald skin was left around each box. All grafts were stored at 40°F (4.4°C) until placement into the patient’s scalp. Extremely miniaturized hairs (vellus) were not included in the hair counts. Photos were taken of each box at 5, 8, and 11.2 months.



Figure 1. 16 Study boxes marked off.

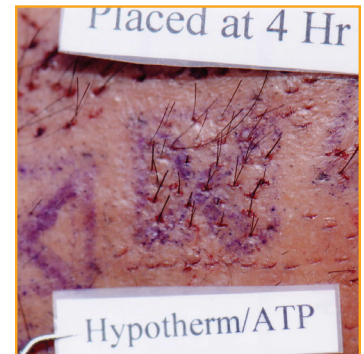


Figure 2. Close-up of study box with grafts planted.

### Results

The final hair counts took more than 4 hours to complete with both “full terminal” hairs and “slightly thin” hairs included. Wispy vellus hairs were not counted. Figure 3 shows the final percentage of growing hairs present at 11.2 months in the 16 study boxes. The results in three of the boxes were unexpected: the saline-stored graft boxes planted at the 2- and 4-hour time points yielded very low hair growth (74% and 64%, respectively) and the 8-hour box with grafts stored in Hypothermosol/ATP revealed a 122% survival. All other counts were somewhat as expected and made sense in light of the amount of time out of body and the storage medium used.

	Saline	Hyp./ATP
2 Hr.	74%	90%
4 Hr.	64%	90%
6 Hr.	90%	92%
8 Hr.	90%	122%
24 Hr.	74%	82%
48 Hr.	68%	84%
72 Hr.	20%	76%
96 Hr.	12%	40%

Figure 3. Final percentage of growing hairs.

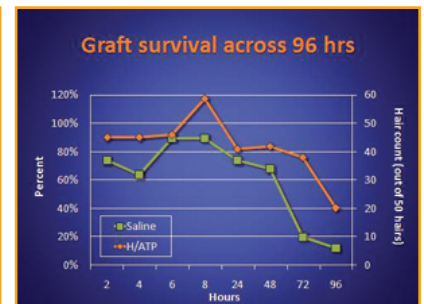


Figure 4. Comparison of graft survival over 96 hours.

The graft survival in the Hypothermosol/ATP boxes was overwhelmingly superior to that in the saline boxes, except for at the 6-hour time point, where it was essentially the same (Figure 4). The most dramatic difference was at 72 hours, where a meager growth of 20% for the saline grafts contrasted with 76% for the Hypothermosol/ATP.

Make plans to attend!



<http://www.ishrs.org/AnnualMeeting.html>