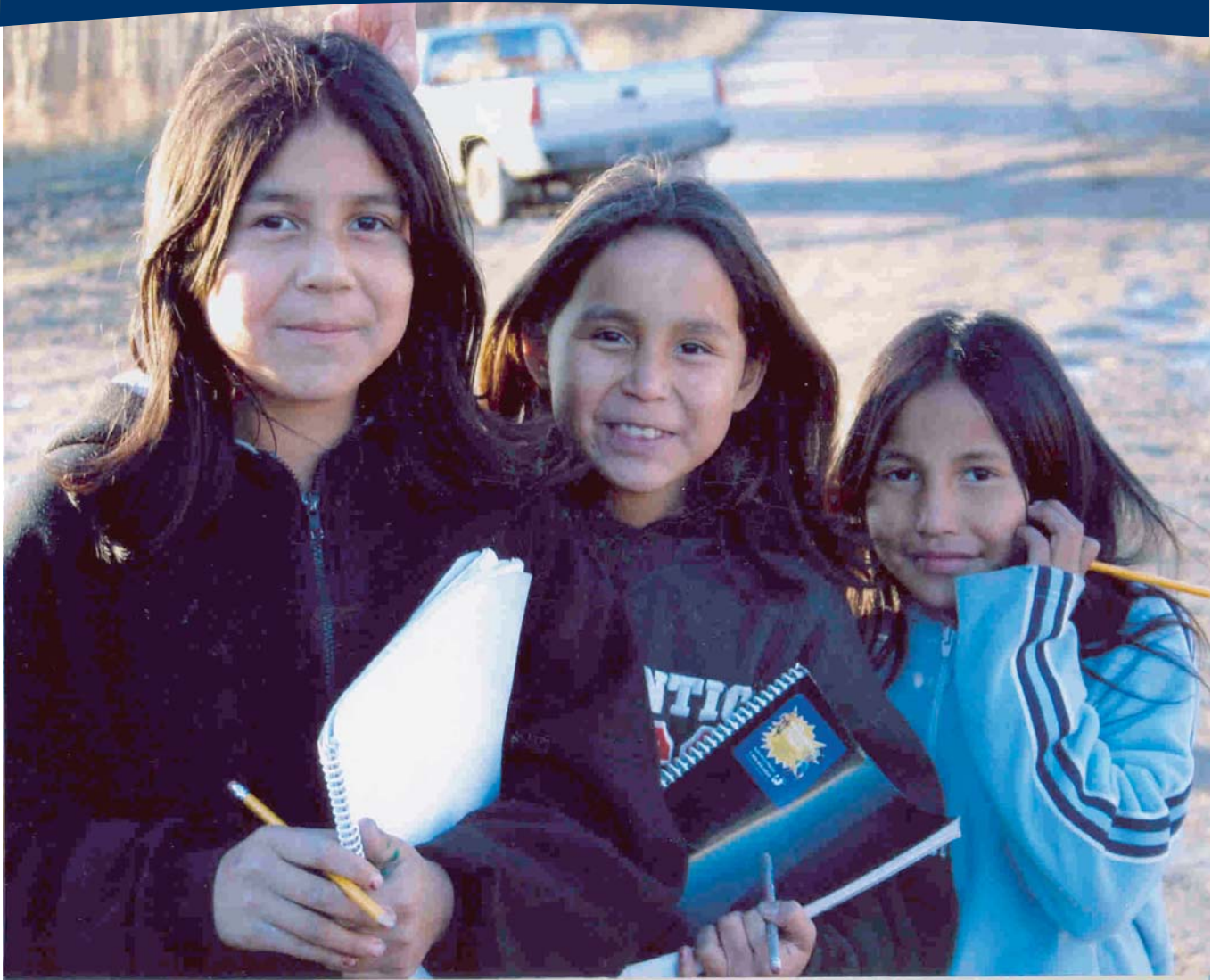


# Report of the Inaugural High School Summer Science Camp July 2006



## The Need for Early Intervention

The first medical school in Canada for the 21st century, the Northern Ontario School of Medicine (NOSM) has as a core value to contribute to improving the health of the people and communities of Northern Ontario by advancing the highest quality of medical practice, learning, teaching, research, and professionalism. NOSM is the only new School in Canada in the past 30 years and is founded upon the principles of social accountability and thus has as its mission the training of more physicians from Aboriginal backgrounds, rural environments, and from Francophone backgrounds.



Northern Ontario  
School of Medicine

The need for a focus on youth in Northern Canada stems from the knowledge that youth from these three backgrounds are at higher risk for not completing school. Even when they do complete their high school studies in smaller communities, they often have limited exposure to science courses and thus do not do as well in the competitive University pre-health curriculum required to gain entry to health science schools, in particular, medical school. An example of this phenomenon can be found in the very small number of Aboriginal physicians in Canada and the awareness that their number is well below what would be expected given the number of Aboriginal people in Canada. The National Aboriginal Health Organization (1) estimated in 2002 that there were 150 Aboriginal doctors in Canada which means that less than 0.3% of Canadian doctors are Aboriginal and thus there is a ratio of Aboriginal doctors to Aboriginal people of 1:33,000 compared to a ratio of 1:515 for non-Aboriginal physicians to non-Aboriginal people. While the number of first year Aboriginal medical students entering Canadian medical schools increased from 8 to 18 between 1999 and 2002, the total number of non-Aboriginal students increased from 1458 to 2020 over that same period of time. Thus while any increase is good to see, the increase in the percentage of first year medical students from Aboriginal background changed only marginally from 0.5% in 1999 to 0.8% in 2002 (2). Studies have shown that enrichment programs coordinated out of medical schools targeting at risk youth can make a difference. (3).

The Northern Ontario School of Medicine is already making a difference in work force issues with 11% of its entering class of 2005 Aboriginal students, 16% Francophone and 78% of the class with at least 10 years in Northern Ontario communities. NOSM's second entering class saw a drop of Aboriginal students from the Charter Class of 11% to 5%. This is most likely related directly to the relatively small number of Aboriginal applicants in the admissions pool.

Current NOSM Aboriginal and Francophone medical students are eager to play a role in working with youth and serving as role models for high school aged students. The inaugural NOSM Summer Science Camp was held at the NOSM West campus, Lakehead University in July 2006. NOSM faculty members played a key role in designing the curriculum and then supervising the Aboriginal and Francophone medical students who worked directly with the targeted students. The intent was to maximize the time that the Aboriginal and Francophone medical students spent with the high school students from similar backgrounds.

### **Designing the Program: A Community Based Effort**

The encouragement for the Medical School to create an early intervention program has its origins workshops conducted early in the design phase of the Medical School. For example, the Follow Your Dreams Aboriginal workshop held in Wauzhushk Onigum First Nation, June 10-12, 2003, was attended by over 130 Aboriginal people and the leadership of the Medical School. Aboriginal people at the Workshop focused attention on the need to encourage Northern Ontario youth to pursue health care careers at an early age (4). Similarly, the symposium on "Francophones and the Northern Ontario School of Medicine", held in May 2005, highlighted the importance of recruiting Francophone students into medicine (5). Funding from the ING Foundation and the Ministry of Research and Innovation was obtained to support a pilot Summer Science Camp in Thunder Bay. The School's own telephone survey of the Aboriginal applicants for the Charter Class guided this effort (6).

## Northern Ontario School of Medicine

The NOSM Aboriginal Reference Group and the NOSM Francophone Reference Group contributed members of the Steering Committee to plan the high school Summer Science Camp. Members of the Steering Committee came from community organizations including the Metis Nation of Ontario, Oshki-Pimache-O Win, Aboriginal Recruitment Coordinating Organization, Indian Youth Friendship Center, the Association des Francophones du Nord-Ouest de l'Ontario and A.P.E. Franco-Superieur. They were joined by three NOSM full time Medical Sciences faculty members, three NOSM medical students and NOSM staff from Admissions, Faculty Development, Academic Activities, Student Affairs, Aboriginal Affairs, Research, and Francophone Affairs. These individuals distributed themselves into an Admissions Committee and a Curriculum Committee. For this pilot year, only Thunder Bay high schools were involved. It is hoped that, in the future, students from all over Northern Ontario can be accommodated.

The Admissions Committee distributed a description of the program to all high school principals and counselors in the Thunder Bay area asking for nominations of potential students. The initial goal of having 10 students for the week was stretched to 12 students as it became difficult to say "no" to promising students. Eleven of these twelve students completed the week with one student dropping out after the second day for personal reasons.

The Curriculum Committee developed the week long experience with hands on activities that created a meaningful relationship between science and helping people. The calendar of events is attached.

The photos below were taken on the last day after these two teams of students presented their "Digital Diary" which was their collection of photos and ideas about the impact of the week on them.





## Hands-on Activities

The emphasis of the week of activities was creating a connection between meaningful health care interventions and the basic sciences. After the first morning of small group communication exercises, the students were presented physics information that explained the basis of x-ray creation. The medical students and two emergency physicians then taught basic anatomical principles of the extremities as they reviewed radiographs of normal and broken bones of the arms and legs.

These "X-Ray rounds" were then followed by training in how to put on and remove casts. Each student then practiced by putting casts on one another. By the time family members joined the activity for a family barbeque and informal discussion about health care careers with parents, their teenagers were proudly showing the casts on arms and legs to their siblings.

Pharmaceutical principles were discussed and followed by a tour of Old Fort William where a restored apothecary shop was available and staff in period costume explained how the people of the 1700's would have used various herbal remedies. A plant walk with two Aboriginal elders then followed this session. Discussions around Aboriginal healing ceremonies using various remedies from roots and plants were explained.

The entire week was filled with science to health connections with daily visits to the microbiology project where cultures that they had started on Monday demonstrated some basic principles of that discipline. The physiology of the heart's electrical conduction system lead to listening to the

heart and breath sounds of “Harvey” a state of the art manikin that simulates many chronic and acute cardiovascular conditions. Holding a preserved human heart in their hands was the highlight for several students.

These science to health sessions were complemented by discussions on how to prepare now for careers in medicine, nursing and allied health.

## Program Evaluation

At the end of the week, students were asked to evaluate the overall experience. The instructors did the same and were very enthusiastic about the energy that the students brought to the sessions. The high school students themselves were consistently very satisfied and were particularly pleased to have Aboriginal and Francophone medical students spending the entire week with them. Uniformly, the high school students reported in both the written form and in the final digital diary report that they were all thinking more now of possible careers in medicine related fields.

The individual activities over the week were rated as follows and this pilot information will be used in the design of future high school science camps. Ten students completed the evaluation form and rated activities on a 1-5 scale with 1 being poor and 5 being excellent.

Casting each other	4.9
Heart Lab (Harvey)	4.6
Agar plates (microbiology)	4.4
Apothecary Tour	4.0
X-Ray rounds	3.6
Analysis of water sample	3.0
DNA analysis	2.8
Plant Walk	2.8

**Overall experience** 4.5

### Favorites

Heart Lab – I never saw a heart before  
 Microbiology – I want to be a medical laboratory tech  
 Hearts – because it was the closest thing to medicine  
 Plant walk – learned more about medicines  
 Digital Diaries – expressing our opinions

Nature Walk  
 Casting, fun, new  
 Casting, kept my casts  
 Everything

### Least Favorites

DNA Analysis – done it in school already  
 Heart Lab  
 Plant Walk – boring  
 Food – I didn’t like the food  
 Smudge – the smell of smoke



## Conclusion

The inaugural NOSM High School Summer Science Camp was a great success as measured by feedback from participants and instructors alike. This success provides the basis for future similar high school enrichment summer activities involving participants from all parts of Northern Ontario.

## References

1. National Aboriginal Health Organization. Health Careers Education and Training Opportunities for Aboriginal People. Ottawa: National Aboriginal Health Organization, 2002
2. Spencer A, Young T, Williams S, Yan D, Horsfall, S. Survey on Aboriginal Issues within Canadian Medical Programmes. *Medical Education* 2005; 39:1101-1109.
3. Carline JD, Hunt DD, Patterson DG, Garcia CG. (1999) Participation in Academic or Research Enrichment Programs and Medical School Admission Interview Scores. *Academic Medicine*. 74(4), 360-362.
4. NOMS. Follow Your Dreams: Report of the NOMS Aboriginal Workshop. 10 - 12 June 2003. Northern Ontario School of Medicine.
5. NOSM. A Community Vision: Report of the Symposium "Francophones and the Northern Ontario School of Medicine". 13 -14 May 2005. Northern Ontario School of Medicine.
6. Hunt DD, Faries E, McKenzie O, Konkin, Szabo T, Strasser R, (2005) Understanding and Listening to Aboriginal Applicants to Medical School A Working Paper of the Northern Ontario School of Medicine.

# Northern Ontario School of Medicine

<p><b>MONDAY, JULY 17</b> <b>SCHOOL OF MEDICINE</b></p>	8:30 am	Registration/Welcome/Opening Remarks ( <i>Dr. Dan Hunt</i> ) <b>(Room 1002)</b>
	9:00 am	Opening Prayer and Smudge ( <i>Elder Ernie Kwandibens</i> ) Introductions ( <i>All participants</i> )
	9:30 am	Team Building Exercise ( <i>Dr. Hunt</i> ) <b>(Room 1002) (Breakout Room 1002/1006)</b>
	11:30 am	Hand washing – Agar plates ( <i>Pam Tallon</i> ) <b>(Room 3001)</b>
	12:30 pm	LUNCH <b>(Lobby / Outside)</b>
	1:30 pm	Introduction to Digital Diaries Project ( <i>Dr. Hunt/ Tracie Smith</i> ) <b>(Room 2003 – Smudge Room)</b>
	2:30 pm	X-ray labs with prosected extremities ( <i>Curtis Shewchuk/ Pam Tallon</i> ) <b>(Room 1002)</b> Castings ( <i>Dr. David Mutrie, Dr. Marie-Pierre Carpentier, Lana Potts, Nicole Beauvais, Lianne Gauvin</i> ) <b>(language translation of extremities)</b>
	4:30 pm	BBQ <b>(Lobby / Outside)</b>
<p><b>TUESDAY, JULY 18</b> <b>SCHOOL OF MEDICINE</b> <b>OLD FORT WILLIAM</b></p>	8:30 am	Agar Plate check ( <i>Pam Tallon</i> ) <b>(Room 3001)</b> Field Work (set up lab kits) ( <i>Pam Tallon</i> )
	10:00 am	Introducing the Medicine Wheel ( <i>Gerry Martin, Ernie Kwandibens</i> ) <b>(Room 1002)</b>
	11:30 am	Travel to Old Fort William – <b>(Drop off at Visitors Centre, Admissions Desk – Tour Guide)</b>
	12:00 pm	LUNCH <b>(Visitors Centre Banquet Room )</b>
	12:45 pm	Apothecary Tour at Old Fort William
	2:15 pm	Travel back to NOSM
	2:45 pm	Communication Exercise ( <i>Ian Peltier, Gerry Martin, Lianne Gauvin, Lana Potts, Nicole Beauvais</i> )

# Northern Ontario School of Medicine

<b>WEDNESDAY, JULY 19 SCHOOL OF MEDICINE</b>	8:30 am	Agar Plate check ( <i>Pam Tallon</i> ) ( <b>Room 3001</b> ) Cardiovascular system, blood analysis, heart anatomy, heart sounds ( <b>Room 1002</b> ) (Harvey Simulator) ( <i>Curtis Shewchuk, Lana Potts, Nicole Beauvais, Lianne Gauvin</i> )
	10:30 am	Digital Diaries Project ( <b>Room 2003</b> )
	1:00 pm	LUNCH ( <b>Lobby / Outside</b> )
	2:00 pm	Travel to Plant Walk – Lakeshore Drive ( <b>past Audrey Road – across from TB paper Mill</b> )
	2:30 pm	Plant Walk: History of Medicinal Plants -- with focus on sage, cedar, sweetgrass, birch leaves, willows (collection of specimens) (eppy pens required)
	4:00 pm	Travel back to NOSM
<b>THURSDAY, JULY 20 SCHOOL OF MEDICINE</b>	8:30 am	Agar Plate check Microscopic Analysis ( <i>Pam Tallon</i> )
	9:30 am	Lab analysis of water specimens collected on plant walk ( <i>Pam Tallon, Lana Potts, Nicole Beauvais, Lianne Gauvin</i> )
	12:00 pm	LUNCH with Aboriginal Reference Group ( <b>Lobby / outside</b> )
	1:00 pm	Preparation of Group Project ( <b>students will work to finalize their presentations</b> )
<b>FRIDAY, JULY 21 SCHOOL OF MEDICINE</b>	8:30 am	DNA analysis ( <i>Pam Tallon</i> ) ( <b>Room 3001</b> )
	9:30 am	Health Care Career Options – ( <i>Gerry Martin, Debra Cava-Petrie, Confederation College</i> ) Career discussion – explanation of pathways to all health care careers ( <b>Room 1002</b> ) <b>Open session/student discussions (Room 1002)</b>
	12:00 am	LUNCH ( <b>Lobby / Outside</b> )
	12:45 pm	Travel to Cancer Centre Lab ( <b>meet at main entrance to hospital – revolving doors</b> )
	1:00 pm	Tour of Cancer Centre Lab ( <i>Dr. Ingeborg Zehbe, Kyle Cullingham</i> )
	2:15 pm	Travel back to NOSM
	2:30 pm	Digital Diaries Project Presentation from Students ( <b>Room 1002</b> )
3:30 pm	Closing Ceremonies/ Closing Prayer ( <i>Dan Hunt, Ernie Kwandibens</i> )	



Northern Ontario School of Medicine gratefully acknowledges the financial contributions of the ING Foundation and the Ministry of Research and Innovation.



Northern Ontario  
School of Medicine

**West Campus**  
**Lakehead University**  
955 Oliver Road  
Thunder Bay, ON P7B 5E1  
Tel: 807-766-7300  
Fax: 807-766-7370

**East Campus**  
**Laurentian University**  
935 Ramsey Lake Road  
Sudbury, ON P3E 2C6  
Tel: 705-675-4883  
Fax: 705-675-4858

[www.normed.ca](http://www.normed.ca)



École de médecine  
du Nord de l'Ontario