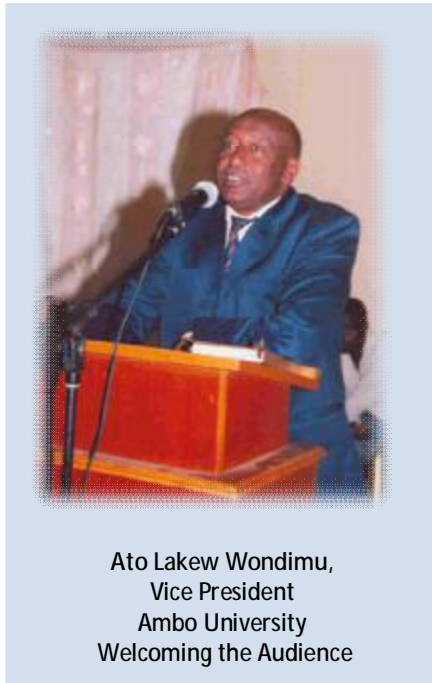


The Department of Biology, Ambo University, Ethiopia organized a one day Seminar cum Workshop on the Use of Alternatives to Animals in Life Science Education on 23<sup>rd</sup> December 2009 in collaboration with the Mahatma Gandhi Doerenkamp Centre for Alternatives, Bharathidasan University, Tamilnadu, India, Doerenkamp Zbinden Foundation, Switzerland and I-CARE, Italy. The seminar was conducted in the New Seminar Hall of the University, and the inauguration of the seminar was addressed by many dignitaries. Dr. Adhana Haile, Honorable Deputy State Minister for Education, Govt. of Ethiopia, was the Chief Guest of the function. Dr. Mitiku Tesso, the President of Ambo University, presided over the function. Ato Lakew Wondimu, the Vice President of the Ambo University, delivered the welcome address. Dr. P. Natarajan, Professor and Director, presented a brief report on the background and the importance of the seminar and the workshop. Distinguished dignitaries, Mr. Subash Chand, Second Secretary to the Indian Embassy at Addis Ababa, and Dr. Brook Lemma, Director of Research, Addis Ababa University, offered felicitations. Ato Alemayehu, Head of the Department of Biology, proposed the Vote of thanks.



L to R: Ato Tedessa Kenea, Ato Lakew Wondimu,  
Dr. Mitiku Tesso, Mr. Subash Chand, Dr. Adhana Haile

**Ato Lakew Wondimu**, the Vice President of Ambo University, in his welcome address explained that although the concept of Alternatives to the use



Ato Lakew Wondimu,  
Vice President  
Ambo University  
Welcoming the Audience

of animals in life science education has been discussed at length in several national and international conferences, the present seminar in Ambo University is first of its kind in Africa. The subject is very vital in the context of killing innumerable voiceless animals for the sake of education, research and testing. Animal ethics is gaining exceptional significance all over the world and it is imperative that all animals have to be protected from merciless killing, thereby man can respect all other life forms. There is no doubt that the truth of science has to be brought out through experimentation but definitely not by killing innocent animals. He congratulated the MGDC, India, DZF, Switserzerland and I-CARE, Italy for their noble work of protecting the animals and propagating the mission of *Humane Education*. He specially thanked the

Ambassadors of this Mission Dr.Akbarsha, Chair and the Director, MGDC, India, Dr.M.C. Sathyanarayana, MGDC, India and Dr.Shiranee Pereira, I-CARE, India, who travelled all the way from India to Ethiopia to conduct this very important and timely programme in Africa. He emphasized that there is imperative need to follow the Principles of 3Rs in Ethiopia in all its real spirit.

**Dr. P. Natarajan**, Professor and Director, CATER, Ambo University, briefed the significance of alternatives in life science studies and research. He explained that the main objective of the seminar was to provide *Humane Education* by introducing Alternatives to the Use of Animals in Education and Research. Further, he has stated that although the world has witnessed succession of several ages and that man has witnessed major revolutions during the past hundred years, he has simply forgotten the humane nature of respecting all other life forms. He explained that a large number of innocent animals which live in the fragile ecosystems are killed regularly by man for studies and research. Larger animals are also killed for their products such as skin, tusk, antlers, fur, perfumes, cosmetics and decoration purposes, etc. He

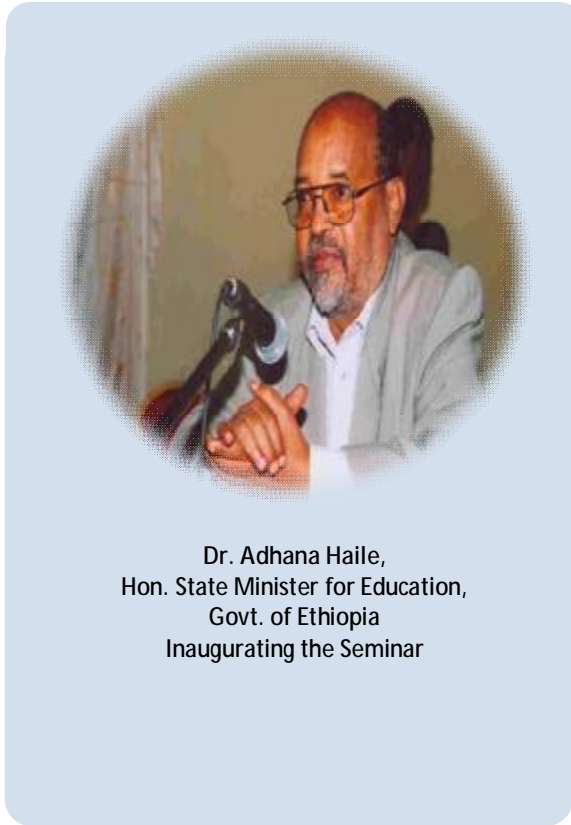


Prof. P. Natarajan  
Professor and Director CATER  
Ambo University  
Briefing the Seminar

also elaborated that in Africa, in recent years, 95 per cent of the rhino populations have been exterminated; more than one third of the elephant population has been wiped out for ivory; primates such as monkeys and chimpanzees are sacrificed for research as they have anatomical, genetic and physiological similarities to human beings. While speaking on alternatives, he emphasized that when a large number of alternatives are now available, why there is a need for animals to be stressed and killed. Man has to change his attitude and develop sympathy over animal species and must refrain from killing such innocent and voiceless creatures. He said that alternatives are widely being used in USA, UK, Germany, Italy, Japan, etc. Further, he

informed that several Universities are now changing the practical syllabi with non animal teaching aids. Because of this, the animal experimentation has considerably decreased to 30-50 % in the last 15 to 20 years across the world. He said that genetic engineering technologies are being used to test vaccines in place of whole animal, insulin production is standardized without the need of animals, skin and eye irritant tests have been successfully conducted with human cell system instead of rabbit experiments. Animal anatomy can be learned effectively through interactive virtual programs of models and CDs. Several alternatives are also available for veterinary education and biomedical research. To propagate the validity of alternatives, several countries are now in a row to conduct series of conferences and seminars. He emphasized that Ambo University should take a lead in the subject in Ethiopia, with the support of MGDC, DZF and I-CARE to propagate *Humane Education* in Africa.

**Dr. Mitiku Tesso**, President of Ambo University, in his Presidential address, viewed that *Humane Education* is absolutely a new concept to Ethiopia. He said that when Professor Natarajan informed him about the concept and the need to promote such studies in Ethiopia, he fully accepted his proposal of conducting this seminar and workshop, so that suitable steps can be taken to reduce animal experimentation which is very much prevalent in Ethiopia. He



Dr. Adhana Haile,  
Hon. State Minister for Education,  
Govt. of Ethiopia  
Inaugurating the Seminar

pointed out that, the course Curricula in different discipline such as zoology, veterinary studies, pharmacology and medicine contain dissection of animals, and animal experimentation for various tests. He also said that animals are being widely used in toxicological tests in several laboratories in Ethiopia. Dr. Mitiku Tesso assured of Ambo University's support to start this mission from Ethiopia so that it will spread to other parts of Africa, and he strongly felt that, the concept of *Humane Education* will gain momentum in Africa as scientific tempo in African countries is steadily increasing in recent years, and this would help promoting teaching and research in

alternatives. He was really very happy to note that animal ethics is getting importance in developed countries, and so also in some developing countries. He was really amazed as to how scientific community gives importance for animal ethics, and the alternatives developed to protect the life of millions of voiceless animals which are near and dear to all human beings. Thus, he urged the scientific community in Ethiopia to follow *Humane Education*.

**Dr. Adhana Haile**, Honorable Deputy State Minister for Education, Govt. of Ethiopia delivered the Chief Guest address. He in his address specially congratulated the President, the Vice President and all teaching faculty and non teaching staff of the Ambo University for their sincere efforts and hard work to elevate the Ambo University College, which was established way back in 1938, into a full fledged University, recently. He was extremely happy over the enormous developments that the University has made, especially in building

infrastructure for teaching and research. He said that Ambo University should explore new areas of advanced research through international collaboration. The University must conduct frequent meetings, seminars and conference so that the scientific community in Ethiopia will get awareness on subjects of contemporary studies. He congratulated the Ambo University for conducting the present seminar on animal Alternatives in Life Sciences. He said that the subject of the seminar, Alternatives to Use of Animals in Life Sciences, though was new to Africa, the theme was not, as Mahathma Gandhi preached Ahimsa not only for India but for the entire world. Dr. Adhana expressed his happiness that the Ambo University has organized a conference of this nature for the first time in Africa, in collaboration with organizations from India, Switzerland and Italy. He emphasized that in the modern world designing and developing new programmes are very vital, and for the development of such programs, especially in the field of biological research, scientific experimentation is significant. But, undoubtedly, animal experimentation is cruel and inhuman, and at any cost practices of subjecting innocent animals to stress and ultimately killing them are brutal. He was happy to note that many countries in the world have timely acted upon to stop animal experimentation, and that the Universities and colleges have started changing their practical syllabi with non animal experimentation. He expressed desire that African countries have to go for alternatives and that the Ambo University may take a lead in Africa in this direction, with the help of MGDC, India, DZF, Switzerland and I-CARE, Italy. With this brief speech, Dr. Adhana Haile, Hon. State Minister for Education inaugurated the seminar and the workshop on the Use of Alternatives to Animals in Life Science Education.

**Prof. M.A. Akbarsha**, the Gandhi - Gruber – Doerenkamp Chair and Director, DZF-funded Mahatma Gandhi – Doerenkamp Center for



Dr. Adhana Haile,  
Hon. State Minister for Education,  
Govt. of Ethiopia  
Releasing Book on 3Rs



**Dr. M.A. Akbarsha**  
MGDC, India  
Delivering the Key Note Address

Alternatives, Bharathdasan University, Tiruchirappalli, India, in his facilitation traced the evolution of the concept of Alternatives in Life Sciences and Biomedical Science. He paid rich tribute to Russell and Burch for vociferously voicing the concern for humane approach to animals when used in experiments and proposing the concept of 3Rs – Refinement, Reduction and Replacement – in Life Sciences and Biomedical Science, way back in 1959, which has since taken significant strides over the past 50 years. It has taken the central stage in humane education, and all efforts to implementation of Alternatives revolve around Russell and Burch's 3Rs

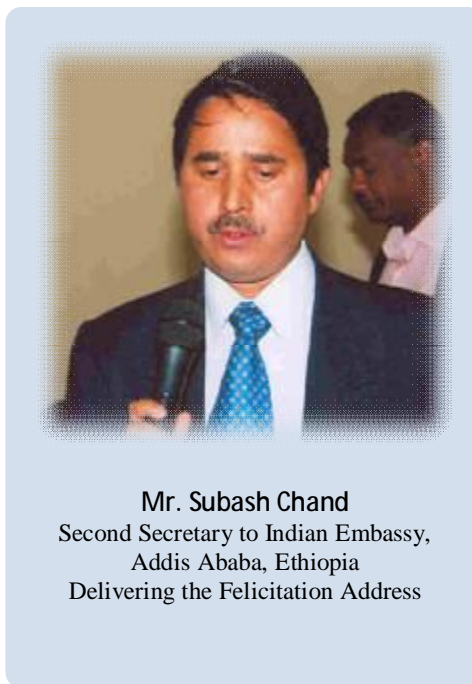
concept. He placed on record the very generous support of FRAME, UK, of providing copies of the abridged version of this book for distribution to participants of the seminar. He was in all praise for the Doerenkamp-Zbinden Foundation, Switzerland, for all that it has been doing towards the cause of animals- establishment of the 6 Chairs and the Centers for Alternatives, awards and prizes for service in the cause of Alternatives and the support to organize programs to sensitize the stake-holders towards the Alternatives, including the one now in Ethiopia.

In his key-note address, Prof Akbarsha raised several issues pertaining to the use of animals in Life Science and Biomedical Science. According to him, dissections were introduced as laboratory exercise, as aspects of Anatomy and Evolution, in the 1920s when there was nothing else available in this context, and at that time there were fewer institutions and fewer students causing use of fewer animals. Now the number of students and the institutions has exponentially increased warranting many times the number of animals removed from the wild for purpose of learning, which can potentially hamper the balance in the ecosystem and also disturb the biodiversity. Several newer

branches of Biology have come up relegating the learning of Anatomy and Evolution to the background and the emphasis now is Cell & Molecular Biology, Genetics and Biotechnology. When this in the case what would be the relevance of animal dissection in the contemporary scenario of Biology learning, he asked. He fervently appealed to make Biology learning more lively and useful by emphasizing laboratory exercises in the modern branches of Biology rather than the mundane dissection of purpose-killed animals, which can potentially develop an attitude in the learner to develop an impression that animals are

“things” which are expendable. He emphasized that the alternatives provide for better learning and exciting pedagogy. According to him Biodiversity approach to learning of animals, where in the learner goes to the place where animals live in their natural habitat, rather than letting the animal visits the laboratory as dead creatures. He also highlighted the several opportunities now available for toxicity and pharmacology testing without using animals- cell and tissue culture models, the *in vitro* alternatives, and computer-aided bio-informatics tools, the *in silico* alternatives.

**Mr. Subash Chand**, Second Secretary to Indian Embassy, Addis Ababa, Ethiopia, in his felicitation address stressed the philosophy of Ahimsa of Mahatma Gandhi. Ahimsa is now catching the attention of the world as we see that the world is now becoming a more unsafe place due a variety of factors some of which are man made and some natural. Ahimsa or non-violence has been prevalent in India from time immemorial. In the very olden times Buddha practised it in India from where it spreads worldwide. Mahatma Gandhi, the



father of Indian nation, practised the philosophy of non-violence. According to him, many in the audience may know that for Mahatma Gandhi Ahimsa got a practical meaning only in Africa during his stay in South Africa. The freedom struggle in India and the policy of apartheid in South Africa in the early 20<sup>th</sup> century led Mahatma Gandhi to embrace the policy of Ahimsa and he practised it to the perfection and led India to freedom in 1947 by using Ahimsa as an effective political tool. During a Gandhi Memorial Lecture in Addis Ababa last year, Honorable Prime Minister of Ethiopia Meles Zenawi, while describing Mahatma Gandhi as the greatest ever exponent of non-violence, remarked that the philosophy of non-violence was needed today more than ever before. He said that the very survival of society and of the international community depended upon the use of the Gandhian philosophy of non-violence. Mr. Subash Chand congratulated the Ambo University for attaining the status of a full-fledged university, and conducted a few big events in less than a year with the participation from international institutions. He said that Ambo University is scaling new heights and he assured of Indian Embassy's whole hearted support to the University in all its future endeavors. He said that last year India hosted the first ever India Africa Forum Summit and as a result of that India has doubled its focus on Africa. The Government of India has decided to establish Chairs on India Studies on specific subjects and the Indian Embassy is in touch with Prof. P. Natarajan of Ambo University in this regard who himself was holding the prestigious Rajiv Gandhi Chair Professor on Contemporary Studies instituted by the Ministry of Human Resources Development, Govt of India to work on the designated theme Ecosystems and Sustainable Development in Cochin University of Science and Technology(CUSAT), Cochin, India. Mr. Subash Chand expressed his appreciation to Ambo University for organizing this unique seminar as it is a new initiative and will go a long way in giving a new dimension to Ahimsa. He said that scientific achievements of this century are unique and the scientific community is quite capable of finding ways to break new grounds without sacrificing anyone's life for that. If one is capable of achieving this, then there can be no better tribute to Mahatma Gandhi from the soil of Africa. He wished the seminar all success in propagating the philosophy of Ahimsa to the scientific community.

**Dr. Brook Lemma**, Director of Research, Addis Ababa University, Ethiopia, in his felicitation speech, emphasized on the animal ethics and need for the preservation of animal species. He shared his experience on cruelty towards animals. He reminded that the implementation effort by law is not fruitful in respect of animal killing. He suggested that the protection of ecosystem is essential in order to rear animals for the sustainable development. “Live and let live” principle is to be encouraged among students through adoption of alternative techniques in their curriculum. He also pointed out that there is a strong animal welfare group working in Addis Ababa and he emphasized that there is an imperative need to strengthen animal welfare movement in Ethiopia and promulgate animal ethics in this country with appropriate measures.



**Dr. Brook Lemma,**  
Director of Research,  
Addis Ababa University, Ethiopia  
Delivering the Felicitation Address

**Dr. Shiranee Pereira,** representing I'CARE–India, and Scientist with the ICAR –India, reiterated the need to bring the philosophy of AHIMSA into the teaching of Life Sciences. She expressed that there is an urgent need to realize that inculcating the concept of non violence in the learning of Life Sciences is a psycho-social need of the hour, besides the fact that it is recognized to be pedagogically superior and environmentally friendly. Vivisection only serves to perpetrate the idea that 'to kill' is both legitimate and acceptable and she said that this was very nearly the paradox of our education system. She added that through centuries, every

great saint and philosopher preached non violence, every religion and saint spoke of compassion, but these great thoughts remained in text books and libraries and we have forgotten to make them a part of our life and, more importantly, a part of our education systems. She spoke of animal sentience and pain and the need to adopt the concept of 3R's or the science of alternatives in the use of animals which is also mandatory in most countries as it was a legal requirement and was binding on teachers, scientists and students in both teaching and basic biomedical research. Besides this, the 'International Declaration of Bologna' which was declared at the 3rd World Congress on Alternatives and Animal use in the Life Sciences, strongly endorses and reaffirms the principles put forward by Russell and Burch in 1959. It states that "Humane Science is a prerequisite for good science, and is best achieved in relation to laboratory animal procedures by the vigorous promotion and application of the three R's. The "three Rs" should serve as a



**Dr. Shiranee Pereira**  
**I'CARE India**  
**Delivering the Lecture**

unifying concept, a challenge, and an opportunity for reaping benefits of every kind - scientific.” Her talk covered details of painful animal procedures and experiments used normally in bio medical research and the gamut of animal procedures used in the production of cosmetics and pharmaceuticals and the available alternatives today that replaced eye and skin tests on animals. She concluded saying “Science may have found a solution to all evils but found no remedy for the worst of them all – the apathy of the human mind”.

**Dr. M.C. Sathyanarayana**, Associate Professor, Department of Zoology and Wildlife Biology, A.V.C. College, Mannampandal, Mayiladuturai Tamil Nadu, India, spoke on Dissection Alternatives and Innovative Digitalized (CD-ROMS) Alternatives to the Use of Animals in Life Science Education. In his talk, he explained that, dissection is the exploration of dead animals in the classroom to see their internal parts. The concept of animal dissections in Zoology curriculum was imported from the Western countries and was widely practised in schools in 1920s. Further, animal dissections are the major components of the practical curriculum for undergraduate and post graduate



**Dr. M.C. Sathyanarayana,**  
MGDC, India  
Delivering the Lecture

studies. With the expansion of higher education, more colleges have come up and, therefore, more students, warranting sacrifice of more animals. This resulted in the gross depletion of some important animals like green frog and garden lizard. He stated that over 170 animal species are sacrificed for different studies worldwide. People for the Ethical Treatment of Animals (PETA) estimates that almost 6 million frogs a year are killed for dissection and it was estimated that 25 - 40 million animals in the U.S are being stressed and killed each year in laboratories for biomedical experimentation, product and cosmetic testing, and in education. As a result, the animal biodiversity is declining world wide.

Further, he added that the attitude of teacher has not yet changed. The teacher should realize the practical difficulties

in getting the animals for dissection which ultimately affect the students. He emphasized that one has to use the digital technologies which are now available and these technologies have to be incorporated in the curriculum as an alternative to the use of animals in the laboratories. He explained the large number of computer simulation and CD ROMs available make teachers and students to think creatively and go further beyond chalk and talk method of teaching. Further, alternatives to dissection are clean and cheaper and it allows students to learn at their own pace and reduce safety concerns. He urged that this is high time for animal science teachers to take up decision regarding minimizing or total replacement of animals with flesh and blood. He stressed that through virtual dissections and experiments, the students can perform on-screen, to full virtual reality simulations with very high degree of interactivity. The present digital age, keyboard, mouse and interactive multimedia software packages in CD-ROMs in Animal Sciences not only supplement black board but also play a significant role in the conservation of animals. Further, the use of computer aided CD-ROM alternatives will result in creativity of teachers from the conventional dissection process. Virtual laboratory makes both the students and teachers to be pedagogically, scientifically and ethically superior to the conventional animal dissections. The teachers can make use of the assessment methods viz., quiz, tag, labeling and testing, available in the CD-ROM such as *Dissection Works* and *ProDissector Frog*. *ProDissector FROG* is a professionally prepared interactive, multimedia programme to understand the anatomy and physiology of frog. Similarly *ExPharm T1.00* is an educational software package which simulates animal experiments in pharmacology. He thus urged that Ethiopia should be a leader in Africa to start the movement of Humane Education and protect the animals from killing for the purpose of education, research and testing.



The participants were given hands on training on the use of tools and software of Alternatives

**Demonstration:** The participants were given hands on training on the use of tools and software in alternatives in animal science education. The CD's pertaining to dissection were given to the participants. Dr.M.C.Sathyanarayana and Dr.M.A Akbarsha demonstrated the following soft wares to the participants to learn by themselves in the Computer.

1. Pro dissector FROG
2. The Digital Frog 2
3. BioLab: Frog-Realistic activities – Anatomy and Physiology of the Frog
- 4 .Dissection Works
5. Frog, Crayfish, Earthworm, Perch, Pig
6. Anatomy of the Pigeon
7. The Dogfish
8. Anatomy of the Rat
9. PHYSIOLOGY *PhysioEx*<sup>TM</sup> 5.0

10. Clinical skills and surgery compilation

11. Pictures instead of animals

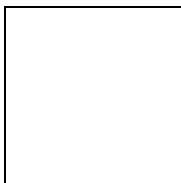
12. Ex Pharm T1.00

**Dr.Shiranee Pereira** demonstrated the use of mannequines in veterinary studies. It is a training mannikin with an ability to simulate and trauma of jugular vascular access. It features a realistic airway, trachea, esophagus, epiglottis, working lungs, artificial pulse and is designed to practice endotracheal intubation, intravenous puncture for IV fluids, mouth to mouth resuscitation, bandaging and splinting with disposable and cleanable parts, artificial blood and realistic features .



Dr. Shiranee Pereira explaining the use of mannikin 'Critical Care Jerry' A Product Of Rescue Critters, USA.

## Glimpses of the Seminar





List of participants

I. Participants from Other Universities			
S/N	Name	Designation	Address
1	Dr. Brook Lemma	Research Director	Addis Ababa University
2	Dr. Seyoum Mengistou	Assoc. Professor	Addis Ababa University
3	Dr. Abebe Getahun	Assoc. Professor	Addis Ababa University
4	Dr. Eshete Dejen	Fisheries Technical Officer	FAO, AA, Ethiopia
5	Dr. Zenebe Tadesse	Researcher	Sebeta National Fisheries
6	Dr. Charles Twesige	Professor and Chair	Kampala University, Uganda
7	Dr. M. Gufran Khan	Assist. Professor	Arbaminch University
8	Ato Lemma Abera	Researcher	Ziway
9	Ato Yared Tigabu	Researcher	Sebeta NATinal Fisheriwes, Sebeta
10	Ato Ashagrie Gibton	Researcher	Bahirdar University
11	Ato Asaminew Tassew	Researcher	Bahirdar University
12	Ato Dereje Tewabe	Researcher	Bahirdar Research Center
13	Ato Gorawu Goshu	Researcher	Bahirdar Research Center
14	Ato Aschalew Lakew	Research Director	Sebeta National Fisheries
16	Ato Fasil Degefu	Researcher	Sebeta National Fisheries
17	Ato Wassie Anteneh	Lecturer	Bahirdar University

List of participants from Ambo University

S/N	Name	Designation	Address
I. Biology Department			
A. Staff			
1	Ato Lakew Wondimu	Vice President for Academic & Research	Ambo University
2	Prof. P. Natarajan	Professor and Director, CATER	Ambo University
3	Dr. Esayas Aga	Asst. Professor	Ambo University
4	Dr. Gebeyehu G. Michael	Asst. Professor	Ambo University
5	Dr. P. C. Prabu	Asst. Professor	Ambo University
6	Dr. Prabha Devi	Asst. Professor	Ambo University
7	Dr. V. Sreenivasa	Asst. Professor	Ambo University
8	Mrs Vinodhini	Lecturer	Ambo University
9	Ato Siraj Mammo	lecturer	Ambo University
10	Ato Getachew Fetahi	lecturer	Ambo University
11	Ato Geda Kebede	lecturer	Ambo University
12	Ato Yonas Alem	Graduate Assistant	Ambo University
13	Ato Yiglet Mebrate	Graduate Assistant	Ambo University
14	Ato Seifu Juneidi	Graduate Assistant	Ambo University
15	Ato Surafel Kefyalew	Graduate Assistant	Ambo University
16	Ato Alemayehu Negasssa	lecturer	Ambo University
17	Ato Tadelle Nigusie	Asst. Lecturer	Ambo University
B. Students			
1	Mohammed Kemal		
2	Zewdu Belachew		
3	Tigist Tesfaye		
4	Addis Hiwot		

5	Aman Kediri		
6	Dereselign Melese		
7	Mekdu Bedada		
8	Melat Desalegn		
9	Eshetu Gelaw		
10	Tesfaye Getahun		
11	Getu Dida		
12	Tadelech Mokuria		
13	Hewan Abraham		
14	Mohammed Seid		
15	Tolosa Duguma		
<b>II. Veterinary Laboratory Technology Department</b>			
<b>A. Staff</b>			
1	Dr. Manyazewal Anberbir	Assist. Professor	Ambo University
2	Dr. Bizunesh Midekisa	Lecturer	Ambo University
3	Dr. Mebratenesh Mengistu	Assist. Professor	Ambo University
4	Ato Waktola Terfa	Graduate Assistant	Ambo University
5	Ato Getachew Kebebew	Graduate Assistant	Ambo University
<b>B. Students</b>			
1	Getaw Deresse Tadesse		
2	Askale Gizaw Niguse		
3	Chala Dima Jalataa		
4	Lencho Megersa Marami		
5	Hailemariam Legesse Hurissa		
6	Kemal Emiyu Hesso		
7	Hawa Demile Belay		

*Proc. Intl. Sem. on  
Alternatives to the Use Animals in Life-Science Education*

8	Morka Dandecha Bayu		
9	Yodit Mumiye Tachebele		
10	Habtamu Hibistu Alemju		
<b>III. Animal Science Department Staff</b>			
1	W/o Hellen Nigusie	Lecturer	Ambo University
2	Ato Ulfina Gelmessa	Lecturer	Ambo University
3	Ato Tesfaw Ayele	Graduate Assistant	Ambo University
4	Ato Solomon Shiferaw	Graduate Assistant	Ambo University
5	Ato Bikila Teshome	Graduate Assistant	Ambo University
6	Ato Solomon Melaku	Graduate Assistant	Ambo University
7	Ato Bahiru Mekuria	Graduate Assistant	Ambo University
8	Ato Takele Feyera	Graduate Assistant	Ambo University
<b>IV. Institute of Medicine and Health</b>			
<b>A. Staff</b>			
1	Dr. Tilahun Bogale	Assist. Professor	Ambo University
2	Ato Gosa Hailu	Assist. Lecturer	Ambo University
3	Ato Mulatu Kassaumer	Graduate Assistant	Ambo University
4	Ato Eshetu Ejeta	Graduate Assistant	Ambo University
5	Ato Ketema Kenasa	Graduate Assistant	Ambo University
6	Ato Jimma Likisa	Graduate Assistant	Ambo University
7	Ato Yisak Abraham	lecturer	Ambo University
<b>B. Students</b>			
1	Eden Girma		
2	Desta Korso		
3	Aregahegn Biruh		
4	Birihat Wariyo		

*Proc. Intl. Sem. on  
Alternatives to the Use Animals in Life-Science Education*

5	Jemal Adem		
6	Fatuma Wariyo		
7	Mehammed Godana		
8	Kalifa Shehiahimed		
9	Ayantü Abdi		
V. Computer Sciences Department Staff			
1	Ato Alema Gebru	Graduate Assistant	Ambo University
2	Mr P. V. Narayana Rao	Lecturer	Ambo University
3	W/t Aberash Tesfaye	Graduate Assistant	Ambo University
VI. Environmental Science MSc Students			
1	Ato Tolera Megersa		
2	Ato Berhanu Ayana		
3	Ato Haile Tullu		
4	Ato Andinet Solomon		
5	Ato Abiot Abera		
6	Ato Bayisa Dida		
7	Ato Mideksa Bogale		
8	Ato Misgana W/Giorgis		
9	Ato Fedessa Benti		
VII. Aquaculture and Fisheries MSc students			
1	W/o Mesay Eniyew		
2	W/t Tsion Dereje		
3	Ato Thomas Mekonnen		
4	Ato Melkamu Befekadu		



