③ 研究プロポーザル評価表（案）（和・英）

ガーナ国野口記念医学研究所感染症対策プロジェクト
研究課題暫定評価表（案）

本暫定評価表（案）は、ガーナ野口研側より提出された16項目の研究課題について、次期プロジェクトにおける実施可能性を検討するための判断材料とすることを目的として、事前調査団と野口研側代表者が協議を行い、下記5項目に基づき共通意見を記載したものである。（＊本表はあくまで評価のための参考資料である）

1 ガーナにおけるHIV株の分子生物学的・抗原学的特徴 Molecular and antigenetic characterization of HIV strains in Ghana	
(1)保健医療分野への貢献度	・基礎的研究 ・特定の相関関係が見つけられれば、この研究はHIV診断とワクチン開発に役立つこととなる。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：研究助手の増員が必要 ・資機材面：可能
(3)日本の技術協力スキームへの適合性	・協力可能性：専門家派遣が必要 ・必要機材：DNA Sequencer
(4)科学的影響度	・新技術の普及に役立つ研究である。
(5)研究目的達成度	・プロジェクト期間内に達成可能と思われる。
備　考	

2 ガーナにおけるエイズ患者の消化器病理学の病因的研究 Aetiological investigations on gastrointestinal pathology of aids patients in Ghana	
(1)保健医療分野への貢献度	・病因となる薬剤が明らかになれば、適切な治療法が示されることとなる。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資機材面：可能
(3)日本の技術協力スキームへの適合性	・協力可能性：問題なし ・必要機材：Electron Microscopy ELISA and reader
(4)科学的影響度	・この研究は、エイズ患者の腸傷害メカニズムについての情報を得ることができる。
(5)研究目的達成度	・プロジェクト期間内に達成可能と思われる。
備　考	

3 性行為感染症と女性のリプロダクティブ・ヘルス Sexually transmitted diseases and female reproductive health	
(1)保健医療分野への貢献度	・重要課題の一つであり、貢献度が高い。
(2)技術、人員、資機材面の実施可能性	・技術面：(1)クラミディアの培養に必要 (2)免疫蛍光染色法によるクラミディアやHSVの塗抹検査に必要
(3)日本の技術協力スキームへの適合性	・協力可能性：問題なし ・資材調達先：婦人科医の協力次第 ・必要機材：特記すべきものなし
(4)科学的影響度	・国内的影響あり ・重要
(5)研究目的達成度	・研究にあたり婦人科医との協力がうまく進むのであれば、目的達成が可能と思われる。
備　考	

4 ガーナにおけるHIV感染症と結核 Human immuno-deficiency viruses (HIV) infections and tuberculosis in Ghana	
(1)保健医療分野への貢献度	・重要課題の一つであり貢献度は高い。
(2)技術、人員、資機材面の実施可能性	・技術面　：(1)抗酸菌の培養　(2)RFILP ・人員面　：研究助手が必要 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・協力可能性：必要性あり ・専門家・研修員受入：必要性あり ・必要機材等：前半ー安全キャビネット、後半ーP3の結核ラボ
(4)科学的影響度	・西アフリカにおける新技術であり、影響は大きい。
(5)研究目的達成度	・目的達成には、結核ラボ設置後２年間が必要と思われる。
備　考	

5ガーナにおける結核の伝播ー結核と新たに診断された患者とその直接の接触者の研究 Transmission of tuberculosis in Ghana - s study of newly diagnosed cases and their immediate contacts	
(1)保健医療分野への貢献度	・重要課題の一つであり貢献度は高い。
(2)技術、人員、資機材面の実施可能性	・技術面：(1)抗酸菌の培養　(2)RFILP ・人員面：研究助手が必要 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・協力可能性：必要性あり ・専門家・研修員受入：必要性あり ・必要機材等：前半ー安全キャビネット、後半ーP3の結核ラボ
(4)科学的影響度	・西アフリカにおける新技術
(5)研究目的達成度	・目的達成には、結核ラボ設置後２年間が必要と思われる。
備　考	

6ガーナにおける肺結核症の抗酸菌の特性とその抗菌剤感受性パターン Characterization of mycobacterial agents of pulmonary tuberculosis and their antimicrobial sensitivity patterns in Ghana	
(1)保健医療分野への貢献度	・重要課題の一つであり貢献度は高い。
(2)技術、人員、資機材面の実施可能性	・技術面：(1)抗酸菌の培養　(2)RFILP ・人員面：研究助手が必要 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・協力可能性：必要性あり ・専門家・研修員受入：必要性あり ・必要機材等：前半ー安全キャビネット、後半ーP3の結核ラボ
(4)科学的影響度	・国際的影響あり。
(5)研究目的達成度	・目的達成には、結核ラボ設置後２年間が必要と思われる。
備　考	

7 結核における細胞性免疫の表現型及び機能的特長 Phenotypic and functional characterization of cellular immune responses in Tuberculosis	
(1)保健医療分野への貢献度	・基礎研究であり、間接的に保健医療に貢献するに留まる。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・協力可能性：疫学専門家が必要 ・必要機材：コンピュータの更新
(4)科学的影響度	・研究目的が達成されれば、新技術となる。 ・国際的影響あり。
(5)研究目的達成度	・プロジェクト期間内に達成可能と思われる。
備　考	

8 ガーナにおける結核治療の非応諾者の社会・経済学的決定因子 Socio-economic determinants of non compliance to tuberculosis treatment in Ghana	
(1)保健医療分野への貢献度	・保健医療分野の直接的な課題ではないが、非常に重要
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・ローカルコスト：交通費を含めプロジェクト経費にて対応が必要となると思われる。
(4)科学的影響度	・国際的に重要性が高い。
(5)研究目的達成度	・プロジェクト期間内に達成可能と思われる。
備　考	

9 ガーナにおける肝疾患関連ウイルスの血清学的流行状況の研究 A seroprevalence study of viruses associated with Hepatic Disorders in Ghana	
(1)保健医療分野への貢献度	・保健医療分野の政策決定に有益であり、貢献度は高い。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：人員増が必要 ・資材調達：肝臓病専門医の協力次第で実施可能
(3)日本の技術協力スキームへの適合性	・協力可能性：可能 ・必要機材：特記すべきものなし ・ローカルコスト：交通費等について、プロジェクト経費にて対応が必要と思われる。
(4)科学的影響度	・国内的影響あり。
(5)研究目的達成度	・まず肝臓病の臨床定義が必要と思われる。 ・検体収集と臨床情報収集の状況次第で成果が左右される。
備　考	

10ガーナにおけるポリオの分子疫学的研究 Molecular epidemiology of wild poliomyelitis viruses in Ghana	
(1)保健医療分野への貢献度	・現在行われているAFPサーベイランス・システムに貢献する。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・必要機材：DNA Sequencer
(4)科学的影響度	・ポリオ研究者のための新技術となる。
(5)研究目的達成度	・プロジェクト期間内での達成が可能と思われる。
備　考	

11ガーナにおけるウイルス性出血熱の診断とサーベイランスシステムの確立（及びベクター研究） Establishment of a diagnostic and surveilance system for viral haemorrhagic fevers in Ghana : Vector studies	
(1)保健医療分野への貢献度	・重要課題の一つであり貢献度は高い。
(2)技術、人員、資機材面の実施可能性	・黄熱病研究として可能 ・技術面：デング熱ウイルスのためのIgM補足エライザが必要。 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・協力可能性：可能 ・必要機材：特記すべきものなし
(4)科学的影響度	・出血熱疾病の国際的疫学研究に貢献する。
(5)研究目的達成度	・４～５年で達成可能と思われる。
備　考	

12麻疹罹患中の免疫不全とプログラム細胞死 Immune dysfunction and programmed cell death during measles infection	
(1)保健医療分野への貢献度	・基礎研究であり、間接的に保健医療に貢献するに留まる。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・問題なし ・必要機材：データ分析に必要なコンピュータの更新
(4)科学的影響度	・ウイルス免疫学分野の向上に貢献
(5)研究目的達成度	・回復期の血清の収集が可能であれば、協力期間内の達成が可能と思われる。
備　考	

13ガーナにおける風疹感染に関する基礎調査 Assessment of diseases burden associated with rubella infection in Ghana	
(1)保健医療分野への貢献度	・重要課題の一つであり貢献度は高い。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・問題なし ・ローカルコストとして、相当額の域内旅費が必要とされる。
(4)科学的影響度	・新技術であり研究の結果、国内的な影響が予想される。
(5)研究目的達成度	・プロジェクト期間内に達成可能と思われる。
備　考	

14カセナ・ナンカナ県における麻疹伝播に対するAIK-C麻疹ワクチンの効果 The effect of Aik-C measles vaccination on measles transmission in the Kassena Nankana District	
(1)保健医療分野への貢献度	・非常に重要であり、貢献度も高い。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・Aik-C系統ワクチンについては、プロジェクト(II)でも協力している分野であり、問題はないと思われる。
(4)科学的影響度	・国際的影響が予想される。 ・本研究により、ＷＨＯの政策決定に貢献することが期待される。
(5)研究目的達成度	・プロジェクト期間内に達成可能と思われる。
備　考	

15住血吸虫症に対するワクチン候補となる可能性のある防御抗原の開発 Development of potential vaccine candidate antigens for protection against shistosomiasis	
(1)保健医療分野への貢献度	・間接的に貢献するに留まる。効果が出るまでには時間が必要である。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・必要機材：DNA Sequencer ・協力可能性：分子生物学専門家の技術指導が必要である。
(4)科学的影響度	・本研究を実施することで、寄生虫分野の高度な検査が可能となる。
(5)研究目的達成度	・プロジェクト期間内で達成可能と思われる。
備　考	

16感染症診断及びワクチン評価のための齧歯類コロニーの確立と特性の研究 Establishment and characterization of rodent colonies for diagnosis of infections and assay of vaccines	
(1)保健医療分野への貢献度	・間接的に貢献するに留まる。
(2)技術、人員、資機材面の実施可能性	・技術面：可能 ・人員面：可能 ・資材調達：可能
(3)日本の技術協力スキームへの適合性	・必要機材等：無償資金協力による動物舎の建設により、効果的な研究が可能となる。
(4)科学的影響度	・国内的な影響が予想される。
(5)研究目的達成度	・プロジェクト期間内に達成可能と思われる。
備　考	

JICA Phase 3 Project - Summary of Proposed Study

Title: *Molecular and Antigenic Characterization of HIV Strains In Ghana*

Principal Investigator: J.A.M. BRANDFUL Msc. (Molecular Biology),
Virology Unit, NMIMR.

Collaborators in NMIMR:
Dr. K.M. Bosompem, Parasitology Unit
Dr. P.G. Addo, Laboratory Animals Unit
Mr. S. Aidoo, Virology Unit

External Collaborators:
Dr. F Apeagyei, 37 Military Hospital, Accra, Ghana
Dr. F. Anyomi, St. Anthony's Hospital, Dzodze, Ghana
Dr. Y. Adu-Sarkodie, KAT Hospital, Kumasi, Ghana
Dr. M. Newman, Achimota Hospital, Accra, Ghana
Dr. K. Ishikawa, ITG, Antwerp, Belgium
Dr. T. Sata, NIH, Tokyo, Japan.

Background: Studies performed since 1986 have shown a preominance of HIV-1 in Ghana, however mixed infections also occur. In one town in the Eastern Region, HIV-1 subtype A prevails. In addition, unique strains HIV-1 strains are observed.

Serologically, cases of indeterminate HIV results are encountered while vast differences observed between screening and confirmatory results, on the one hand, and PCR results on the other, probably suggest excessive false positivity. Serology is also unable to detect HIV infections in a few cases.

Objectives: To genomically characterize new HIV strains, emphasizing on dually-infected cases by PCR, Heteroduplex Mobility Asaay (HMA) and nucleotide sequencing

To identify and select, using appropriate computer programmes, unusual strains based on HIV V3 loop sequences

To isolate new viruses with unique V3 sequences

To raise antibodies to V3 loop and fragments from enzyme restriction analysis for in-vitro neutralizaton experiments with a panel of indeterminate sera

To clone and express virus-neutralizing sequences

To purify and characterize peptides/proteins for use in comparative serology in paralell with commercial kits

Expected outcome: To develop a more specific and sensitive assay system with Ghanaian HIV antigens to improve upon HIV diagnosis in Ghana.

CRITERIA OF THE ASSESSMENT

1. Molecular and antigenic characterization of HIV strains in Ghana.

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1. Contribution to the Health Sector in Ghana.

   * Basic research

   * If specific sequence is identified, this study will be helpful for diagnosis of HIV and vaccine development.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Technical capacity; available.

   Manpower requirement; necessary for more research assistants.

   Materials resources; available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Collaboration possibility: necessary for a Japanese Expert.

   Technical Equipment: DNA sequencer

4. Scientific Justification/Impact.

   Generation of new information.

5. Feasibility of Attainment of Research.

   Achievable.

SUMMARY- JICA PROJECT ON INFECTIOUS DISEASES (JICA PHASE III).

TITLE: AETIOLOGICAL INVESTIGATIONS ON GASTROINTESTINAL PATHOLOGY OF AIDS PATIENTS IN GHANA.

Principal Investigator : Daleth Agbodaze (Bacteriology Unit, Noguchi Memorial Inst. Med. Research).
Co-Investigators : Dr.E.K. Wiredu (Department of Pathology, University of Ghana Medical School).
Dr. K. Afram. (Department of Medicine, " " " " ").
Supporting & Technical Staff: From the Departments of Pathology, Parasitology, Virology and Bacteriology of Noguchi Institute and the Medical School.

Objectives:

1. To use both classical and expanded repertoire of microbiological techniques and assays for the isolation and identification of :
   a) intestinal parasitic diseases that indicate depressed cell-mediated immunity (specifically, *Cryptosporidia, Giardia, Entamoeba, Isospora,* and *Cyclosporidia* species),
   b) the " classical" as well as the newly recognized bacterial enteric pathogens and their products (cytotoxins, cytolysins, cytotoxic necrotizing factors, adherence factors etc. which have been implicated in disturbance of the intestinal microvasculature integrity, cell death, etc.)
   c) the "important" viral agents implicated in the damage to the ileocolonic mucosa and its perforation
   in AIDS patients (specifically, Cytomegalovirus and Herpes simplex virus type 2).
2. assess the importance of each of these agents as far as their contribution to the gastrointestinal (G.I.T) disturbance, the ensuing clinical conditions (antemortem) and the changes (postmortem) in both the small and large intestines as being reported by the pathologists, are concerned in our geographic locale.
3. Use of animal models for the reproduction of " the observed condition(s)" by the use of the "suspect" agent(s)/ their product(s).
4. Antimicrobial sensitivity tests on the bacterial agents for the purposes of treatment, as well as their assessment for any increased risk towards development of complications in the patients.

Expected Outcome: Intensive activity has been devoted to developing an effective vaccine for AIDS since HIV was identified as the causal agent. As in most scientific endeavours, there have been "exciting advances", as well as setbacks and disappointments. In view of these, the clinicians' efforts will still be directed towards the treatment of the opportunistic infections. A better understanding of the gastrointestinal pathology in this disease condition will offer the possibility of developing new or better therapeutic modes.

RESEARCH PROPOSAL FOR INFECTIOUS DISEASES PROJECT

Project Title: Studies on Enteric Viruses associated with Diarrhoea in HIV infections in Ghana

Investigators:	Dr. G. E. Armah	Electron Microscopy/Histopathology Unit, NMIMR, Legon.
	Mr. J.A.M. Brandful	Virology Unit, NMIMR, Legon.
	Prof. J.O.O. Commey	Dept. of Child Health, Univ. of Ghana Medical School

Study Objectives:

1. Aetiology of enteric viruses in diarrhoea associated with HIV infection
2. Role played by the "novel" viruses in diarrhoea associated with HIV infection
3. The association (if any) of these viruses with severity of diarrhoea in HIV.

Expected Outcome:

1. The study will provide important data on the viral etiologic agents and the roles played by the recently discovered novel viruses in diarrhoea associated with HIV/AIDS in Ghana.
2. This study will also address some public health issues in Ghana by providing important information for the management and control of diarrhoea in HIV/AIDS

Contribution to National Health Sector

HIV/AIDS and its associated problems, eg. diarrhoea, is increasing becoming major public health concern in Ghana. Whilst in developed countries there is some information on the etiologic agents associated with this diarrhoea, it is not so in Ghana. This study will hence provide important information for the effective management and control of diarrhoea associated with HIV/AIDS in Ghana. It also affords us the opportunity working with clinicians to address a public health problem.

Technical Capacity /Manpower requirements

Technical expertise and manpower is available in the institute for the successful execution of this project. Most of the methodology envisaged to used in this project has been well developed and routinely use in earlier projects.

Collaboration Possibility, Expert training, Technical Equipment and local Cost

The major equipment requirement is a new transmission electron microscope with a scanning capability (STEM). This equipment will also be used (as has been the case with the present one supplied to the institute over 16 years ago) by Universities and health related research institutions in Ghana. The local cost will be mainly transportation cost for the collection of specimens and movement between collaborating institutions. The possible collaborative Japanese research Institutions are listed below:

1. Research Institute for Microbial Disease, Osaka, University
2. Mie University Dept. of Medicine

There will however be the need for a training program for a electron microscopy technician to upgrade his skills and knowledge in electron microscopy.

Scientific Impact

This study will add to knowledge in diarrhoea in HIV/AIDS in Ghana. It will also provide important information for the management and control of this disease in Ghana.

Feasible of Attainment of Research

It will be possible to complete this research in 5 years. The methodology envisaged to used in this project has been well developed and routinely use in earlier projects by invstigators.

CRITERIA OF THE ASSESSMENT

2. Aetiologic investigations on gastrointestinal pathology of AIDS patients in Ghana.

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1. Contribution to the Health Sector in Ghana.

When aetiologic agents are defined, proper treatment will be proposed.

2. Technical Capacity/Manpower Requirement, Material Resources.

Technical capacity: available.

Manpower requirements: available.

Material resources: available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

Collaboration possibility: desirable.

Technical equipment: Electron microscopy ELISA and reader.

4. Scientific Justification/Impact.

This experiment provides information of the mechanisms of gut injury in AIDS patients.

5. Feasibility of Attainment of Research.

Available.

Title Sexually transmitted diseases and female reproductive health

Principal Investigator: Dr Patience Akpedonu

Coinvestigators: Dr KM Bosompem

Mr Kwaku Owusu Darko

Mr JM Brandful

External Collaborators: Dr Appea-Kubi, Dept Of Obstetrics and Gynaecology

Dr Lassey, Dept Of Obstetrics and Gynaecology

Dr Edward Mahama, Dept Of Obstetrics and Gynaecology

Objectives:

i) to evaluate the prevalence of sexually transmitted diseases (STDs) among a cross section of women attending the Korle Bu Teaching Hospital

ii) to characterise the aetiological agents of STDs in Accra, Ghana

iii) to assess the risk factors for STDs in Accra, Ghana

Expected outcome:

The study will provide information on the role of bacteria, viruses and parasites in the aetiology of STDs in Accra, Ghana. Where possible the antimicrobial susceptibility patterns of these agents will be assessed and applied in the management of these diseases. Data on risk factors will be applied in educational campaigns for the control of STDs.

CRITERIA OF THE ASSESSMENT

3. Sexually transmitted diseases and female reproductive health.

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1. Contribution to the Health Sector in Ghana.

   Important

2. Technical Capacity/Manpower Requirement, Material Resources.

   Technical capacity: 1. necessary for culture of Chlamydia
   2. necessary for smear examination of Chlamydia and HSV by immunofluorescent staining.

3. Collaboration Possibility with Japanese side/Expert Training
   Technical Equipment and Local Cost.

   Material resources: depending on collaboration with a gynaecologist.

   Collaboration possibility: desirable.

   Technical equipment: available.

4. Scientific Justification/Impact.

   Local, but important.

5. Feasibility of Attainment of Research.

   Depending on collaboration with a gynaecologist.

Title: Human Immunodeficiency Virus (HIV) infections and tuberculosis in Ghana

Principal investigators: Dr Patience Akpedonu, Bacteriology Unit, NMIMR

Mr J Brandful, Virology Unit, NMIMR

Coinvestigators: Mr Anthony Ablordey,

Mrs Dorothy Yeboah-Manu

Mr Simeon Aidoo

External Collaborators: Dr Tettey, Kotobaabi Polyclinic, Ministry of Health

Dr D Akyea, Kotobaabi Polyclinic, Ministry of Health

Col F Apeagyei, 37 Military Hospital

Dr Y Adu-Sarkodie, Komfo Anokye Teaching Hospital, Kumasi

Objectives:

i) to determine the prevalence of tuberculosis in HIV infected patients

ii) to determine the prevalence of HIV in tuberculosis patients

iii) to determine the level of association between tuberculosis and HIV infection

iv) to characterise the mycobacterial agents associated with tuberculosis in HIV patients

Expected Outcome:

The study will provide information of the prevalence of tuberculosis in HIV patients as well as the antimicrobial sensitivity patterns of these bacteria. It will enable a comparison of the actiological agents among this group and HIV uninfected individuals. The data will be applied in the management of these cases to reduce the source infection in the community.

CRITERIA OF THE ASSESSMENT

4. Human Immunodeficiency Virus (HIV) infection and tuberculosis in Ghana.

---

1. Contribution to the Health Sector in Ghana.

   Important.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Technical capacity: 1. culture of mycobacterium
   2. RFILP

   Manpower requirement: research assistant.

   Material resources: available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Collaboration possibility: necessary.

   Expert training: necessary.

   Technical equipment: safety cabinet at first, then TB lab. in P3.

4. Scientific Justification/Impact.

   New information in West Africa.

5. Feasibility of Attainment of Research.

   To achieve the project, 2 years will be necessary after settling TB laboratory.

Title: Transmission of tuberculosis in Ghana - a study of newly diagnosed cases and their immediate contacts

Principal Investigator: Dr Patience Akpedonu, Bacteriology Unit, NMIMR

Coinvestigators: Mr Anthony Ablordey,

Mrs Dorothy Yeboah-Manu

External Collaborators: Dr Tettey, Kotobaabi Polyclinic, Ministry of Health

Dr D Akyea, Kotobaabi Polyclinic, Ministry of Health

Objectives:

i) to identify new cases of TB and determine the level of transmission in their immediate contacts

ii) to evaluate resistance to antimycobacterial agents

iii) to evaluate the relatedness of mycobacteria from this study using molecular biology techniques, such as, Restriction Fragment Length Polymorphism and Polymerase Chain Reaction

Expected Outcome:

The study will provide information on the incidence of tuberculosis in the study locale as well as the number of individuals that are infected by an index case. Data on levels of resistance to various antimycobacterials will be obtained. Both conventional and molecular techniques will be applied in this study which will be the basis for the establishment of a TB laboratory in this country. This laboratory will be a research and reference laboratory which will offer useful service to Ghana and possibly Africa as a whole.

CRITERIA OF THE ASSESSMENT

5. Transmission of Tuberculosis in Ghana: A study of newly diagnosed cases and their immediate contacts.

---

1. Contribution to the Health Sector in Ghana.

   Important.

2. Technical Capacity/Manpower Requirement, Material Resource.

   Same as #4.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Same as #4.

4. Scientific Justification/Impact.

   New information in West Africa.

5. Feasibility of Attainment of Research.

   Same as #4.

Title:	Characterisation of ~~aetiological~~ mycobacterial agents of pulmonary tuberculosis and their antimicrobial sensitivity patterns in Ghana.
Principal Investigator:	Dr Patience Akpedonu, Bacteriology Unit, NMIMR
Coinvestigators:	Mr Anthony Ablordey, Mrs Dorothy Yeboah-Manu
External Collaborators:	Dr K Asamoah and other members of Staff of TB Control Unit, Ministry of Health Chest Clinic, Korle Bu Dr Tettey, Maamobi Polyclinic

Objectives:

i) to set up a mycobacterial laboratory of International repute in support of the National TB Control Programme

ii) to train a core of scientific and technical staff in mycobacteriology

iii) to characterise aetiological agents of pulmonary tuberculosis using both conventional and molecular methods

iv) to evaluate sensitivity patterns of mycobacteria in Ghana

Expected outcome:

The project will provide a well equipped mycobacterial laboratory as well as a core of well trained technical staff. This will enable accurate laboratory diagnosis of mycobacterial infections in Ghana. The laboratory will be a reference laboratory for Ghana and possibly Africa. Data on sensitivity studies will determine the combination of drugs to used in the management of tuberculosis in Ghana. It will also provide information on the relatedness of mycobacteria involved in pulmonary tuberculosis and the transmission of these bacteria.

CRITERIA OF THE ASSESSMENT

6. Characterization of mycobacterial agents of pulmonary tuberculosis and their antimicrobial sensitivity patterns in Ghana.

---

1. Contribution to the Health Sector in Ghana.

   Important.

2. Technical Capacity/Manpower Requirement, Material Resource.

   Same as #4.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Same as #4.

4. Scientific Justification/Impact.

   Global.

5. Feasibility of Attainment of Research.

   Same as #4.

INFECTIOUS DISEASES PROJECT

II. Programme on TB, STDs, HIV/AIDS

Project Title:	Phenotypic and functional characterisation of cellular immune responses in tuberculosis
Investigators:	Dr. B.D. Akanmori - Immunology Unit Mr. B.A. Gyan - Immunology Unit Dr. P.A. Akpedonu - Bacteriology Unit
Collaborators:	Dept. of Microbiology UGMS, Korle-Bu Chest Clinic, Korle-Bu JICA Expert on cellular immunity in mycobacterial infections

Background and expected outcome

Tuberculosis has assumed major importance as a public health problem both in Ghana and world-wide primarily because of the spread of drug resistant strains of the causative agent mostly in HIV/AIDS patients. In Ghana little is known about the disease in general and in particular the immune responses due to mycobacterial infection and how these are modulated by HIV/AIDS. A thorough understanding of the cellular immune responses as envisaged in the present study will provide information about both immunity and pathogenesis of tuberculosis. Such information will aid in better evaluation of treatment and management of patients. An additional benefit will be the building of capacity in the very important field of evaluating cell mediated immune responses. As anticipated JICA Expertise in this field will be tapped to the fullest and augment as well as justify the provision of the flow cytometer in the Immunology Unit. This study will run alongside studies on tuberculosis in the Bacteriology Unit, utilising the same subjects and will also support other studies on CMI in the Immunology Unit.

Requirements

No major equipment is needed. A flow cytometer is already available. A better computer and a floptical disc to enable large volumes of data be stored and analysed are all that will be required. Other items are panels of monoclonal antibodies for flow cytometry and reagents for detection of cytokines. Transportation to and from Korle-Bu for sample collection will also be required.

JICA Expertise will be required to strengthen CMI capability of the Immunology Unit. Short-term Training for one person in Japan will also be required.

CRITERIA OF THE ASSESSMENT

7. Phenotypic and functional characterization of cellular immune responses in tuberculosis.

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1. Contribution to the Health Sector in Ghana.

   Basic study, indirectly.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Technical capacity: available.

   Manpower requirement: available.

   Material resources: available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Collaboration possibility: necessary for the immunologist.

   Technical equipment: up-grading of a computer.

4. Scientific Justification/Impact.

   New information, global.

5. Feasibility of Attainment of Research.

   Available.

TB/HIV-AIDS/STD'S

TITLE: Socio-economic determinants of non compliance to TB treatment in Ghana

Principal Investigator: Mr. C. Ahorlu, Epidemiology Unit, NMIMR
Co-Investigators: Dr. S. Dunyo, Epidemiology Unit, NMIMR
Dr. K. A. Koram, Epidemiology Unit, NMIMR
Dr. P. Akpedonu, Bacteriology Unit, NMIMR

Objectives: To determine the Socio-economic factors associated with non compliance to tuberculosis treatment in Ghana

Outcomes: Factors that make patients default on treatment. These factors will be ploughed back into Health Education programmes of the TB Control Unit

CRITERIA OF THE ASSESSMENT

8. Socio-economic determinants of non-compliance to tuberculosis treatment in Ghana.

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1. Contribution to the Health Sector in Ghana.

   Significantly important.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Local cost: necessary including transportation.

4. Scientific Justification/Impact.

   Globally important.

5. Feasibility of Attainment of Research.

   Available.

A SEROPREVALENCE STUDY OF VIRUSES ASSOCIATED WITH HEPATIC DISORDERS IN GHANA

INVESTIGATORS:

MUBARAK OSEI-KWASI - NMIMR, LEGON
CLINICAL PATHOLOGY UNIT - NMIMR, LEGON
EPIDEMIOLOGY UNIT - NMIMR, LEGON
DISEASES CONTROL UNIT - MOH

OBJECTIVES:

1. To study the seroprevalence of viruses associated with hepatic disorders in Northern Ghana.
2. To assess the involvement viruses in hepatic disorders in Ghana

Expected outcome: It is expected at the end off the study that:

1. The prevalence of viruses that cause hepatic disorders in the northern sector of Ghana will be established i. by age and ii. by sex.
2. The involvement of viruses in cases of hepatic disorders in Ghana will be established.

CRITERIA OF THE ASSESSMENT

9. A seroprevalence study of viruses associated with hepatic diseases in Ghana.

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1. Contribution to the Health Sector in Ghana.

   Helpful for policy making.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Technical capacity: available.

   Manpower requirement: necessary.

   Material resources: depending on collaboration with a hepatologist.

3. Collaboration Possibility with Japanese side/Expert Training
   Technical Equipment and Local Cost.

   Collaboration possibility: desirable.

   Technical equipment: available.

   Transport cost.

4. Scientific Justification/Impact.

   Local.

5. Feasibility of Attainment of Research.

   At first clinical definition of hepatic diseases is necessary.

   Depending on collection of samples and clinical information.

MOLECULAR EPIDEMIOLOGY OF WILD POLIOMYELITIS VIRUSES IN GHANA

INVESTIGATORS: MUBARAK OSEI-KWASI - VIROLOGY UNIT, NMIMR
EPIDEMIOLOGY UNIT - NMIMR
EPI MANAGER, MOH

GENERAL OBJECTIVE

To evaluate the effect of National Immunization Days (NIDs) on the circulation of wild polio virus strains in Ghana.

SPECIFIC OBJECTIVES:
1. To detect and investigate all cases of AFP
2. To characterize at the genomic level wild polio isolates from AFP and environmental samples.

Expected outcome: The effect of NIDs on circulation of wild poliomyelitis virus strains in patients and in environmental samples and their elimination by the year 2000 will be established.

CRITERIA OF THE ASSESSMENT

10. Molecular epidemiology of poliomyelitis viruses in Ghana.

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1. Contribution to the Health Sector in Ghana.

   Ongoing AFP surveillance system.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Available when a DNA sequencer is settled.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   DNA sequencer

4. Scientific Justification/Impact.

   New information for polio researchers.

5. Feasibility of Attainment of Research.

   Depending on Japanese committee's decision.

Summary of project

Title
Establishment of a diagnostic and surveillance system for viral haemorrhagic fevers in Ghana: Vector studies

Investigators
M.A. Appawu, Parasitology Unit, NMIMR
M.D. Wilson Parasitology Unit, NMIMR
G.E. Armah, Electron Microscopy Unit, NMIMR
Michael Aidoo, Virology Unit, NMIMR

Local Collaborators
A. Baffoe-Wilmot, Disease Control Unit, Ministry of Health, Ghana
D. Sam, Disease Control Unit, Ministry of Health, Ghana
F. Binka, Navrongo Health Research Centre, Ministry of Health, Ghana

Rationale and Objectives
Arboviruses are emerging as viruses of great public health concern in Ghana, but the two most important infections are yellow fever and dengue haemorrhagic fever. Yellow fever is endemic and several outbreaks with mortalities of up to 39% have been reported. The extent and the frequencies of these outbreaks have increased dramatically in recent years. The WHO states that Dengue fever is the most important emergent arboviral disease of humans in the tropics. This disease has been reported in the neighbouring countries, but it has never been investigated in Ghana.

The dramatic increase in incidence of arboviral diseases is associated with expanding geographic distribution of the *Aedes* mosquito vectors. At present the health authorities have no diagnostic and surveillance system in place, and therefore can only deal with epidemics after the event.

Overall objective
To develop a diagnostic and a surveillance system for arboviral diseases in Ghana

Specific objectives
1. To conduct vector bionomics studies in areas of known disease outbreaks. This will involve, mosquito sampling and identification of vector species.
2. To isolate and identify viral pathogens and determine the viral contents of mosquitoes that are sampled.
3. To develop a geographical information based system (GIS) for surveillance of arboviral diseases in Ghana using the data obtained in objectives 1. and 2..
4. To train personnel of the Disease Control Unit, Ministry of Health in all aspect of field data collection and to use the GIS system to forecast imminent disease outbreaks.

Expected outcome
The data of vector population, man-vector contact and viral content will be used to assess risks of transmission and estimate the likelihood of disease outbreaks (i.e. forecast). The distributions of arboviral diseases, the viruses and the vectors, and all relevant data will be used to develop a GIS.

INVESTIGATION OF VIRAL HAEMORRHAGIC FEVERS IN NORTHERN GHANA

INVESTIGATORS: DR. MUBARAK OSEI-KWASI
DISEASE CONTROL UNIT, MOH

INTRODUCTION

The last two decades have seen an extensive global resurgence of viral haemorrhagic fevers. Prominent among these in the African countries are yellow fever, Lassa fever and Chikungunya viruses. They are among the many arboviral infections that have reemerged to epidemic proportions in all continents.

The potential threat of yellow fever in Sub-Saharan Africa was clearly shown in 1992 when apart from case incidence in several West African countries, Kenya in East Africa, a subregion which hitherto was said to be fellow fever free had its first experience of the disease. This was again reemphasised when in 1993, a field station in Senegal registered a striking increase in the number of mosquitos with the yellow fever virus.

In 1994 and 1995 outbreaks of haemorrhagic fevers in several districts of the northern sector of Ghana were investigated by the Virology Unit of NMIMR and some of the cases were confirmed as recent infections of yellow fever. In 1996, much wider outbreaks with many deaths were registered in Liberia, Ghana, Benin and Burkina Faso. The experiences of the recent outbreaks of haemorrhagic fevers with many deaths in Benin and Ghana are still fresh in our memory. Yellow fever was confirmed in over 70% of the cases as the causative agent of the illness in Benin and Liberia. However, less than 10% of the suspected cases of viral haemorrhagic fevers which occurred in Ghana could be confirmed as yellow fever cases.

Since recent reports have it that, other arboviruses such as Chigungunya, Lassa, Rift Valley and Dengue have accompanied the resurgence of yellow fever virus in Africa it is possible that others arboviruses not yet identified in Ghana may have caused some of the haemorrhagic fevers in the country. It is therefore planned in this study to investigate the causative agents of haemorrhagic fevers in Ghana.

GENERAL OBJECTIVE: To identify the causative agents of haemorrhagic fevers in Ghana.

Specific Objectives:- 1. To establish laboratory diagnosis of viral haemorrhagic fevers in Ghana.

2. To use appropriate laboratory animal and cell culture techniques to isolate and identify viruses that cause haemorrhagic fevers in and to study their molecular epidemiology.

3. To identify the vectors of viruses that cause haemorrhagic fevers in Ghana and to study their control mechanisms.

CRITERIA OF THE ASSESSMENT

11. Establishment of diagnostic and surveillance systems for viral haemorrhagic fevers, including vector studies.

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1. Contribution to the Health Sector in Ghana.

   Important.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Available for study of yellow fever.

   Technical capacity: IgM captured ELISA for Dengue virus.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Desirable.

   No specific equipment.

4. Scientific Justification/Impact.

   To contribute to global epidemiology of haemorrhagic fever diseases.

5. Feasibility of Attainment of Research.

   Available for 4 - 5 years.

INFECTIOUS DISEASES PROJECT

I. Vaccine Preventable Diseases

Project Title: Immune dysfunction and programmed cell death during measles infection.

Investigators: Dr. B.D. Akanmori - Immunology Unit, NMIMR
Mr. M.M. Addae - Immunology Unit

Collaborators: Dr.(Col.)W.C.Y. Annoff - 37 Military Hospital, Accra.
Dr. Adams Baba - La Polyclinic, Accra
Dr. H. Kamiya - Mie National Hospital, Japan
Dr. Y. Komada - Dept. of Paediatrics, Mie University School of Medicine, Japan

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Background and expected outcome

Deaths associated with measles despite the increase in vaccine coverage still remains a health problem. Severe and prolonged disturbances in cell mediated immunity accompanying measles infection leads to the secondary infections which contribute towards mortality. We have in a recently concluded preliminary study identified suppression of helper T cell activity in measles infection. It is important to continue these studies and examine other cell populations such as atypical T cells. With the capability supplied by JICA for the study of T cells in the immunology Unit, as well as our experiences in the study of T cells in malaria provided by collaborators from Denmark this study intends to provide answers for the immuno-suppression in measles infection for the better management of patients. The study will also strengthen the diagnosis of measles infection as well as provide evaluation for the effectiveness of measles vaccination. in Ghanaian children.

Requirements

No major equipment is required for the study. A flow cytometer is available but the computer attached to it will require upgrading. Collaboration with Dr. Komada is being sought for the execution of the study. Training in CMI is also being sought for at least one person in Japan. Other requirements are monoclonal antibodies for T cell studies and reagents for cytokine assays Local transport costs for sample collection and follow-up is also needed. Liquid nitrogen for storage of cells is also needed. A full budget will be made available in due course.

CRITERIA OF THE ASSESSMENT

12. Immune dysfunction and programmed cell death during measles infection.

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1. Contribution to the Health Sector in Ghana.

   Basic research, indirect.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Available.

   Material Resources: with efforts.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Desirable.

   Technical equipment: up-grading computer.

4. Scientific Justification/Impact.

   To contribute to viral immunology.

5. Feasibility of Attainment of Research.

   Depending on collection of convalescent sera.

TITLE: Assessment of Disease Burden Associated with Rubella infection in Ghana

Principal Investigator: Dr. K. A. Koram, Epidemiology Unit, NMIMR

Co-Investigators: Mr. J. A. M. Braudful, Virology Unit
Dr. S. Dunyo, Epidemiology Unit, NMIMR

Collaborating Institutions
Ophthalmology Unit, Korle-Bu Teaching Hospital
Department of Child Health, Korle-Bu Teaching Hospital
Eye Care Programme: Agogo Hospital
Eye Care Programme: Bawku Hospital

Objectives: To determine the prevalence of HI antibodies in rural/urban adolescent school children.

To determine the extent of CRS as seen in selected hospital in Ghana.

Outcome

1. The estimate of the proportion of young Women reaching child bearing age without antibodies to rubella.

2. An estimate of the proportion of cases of CRS seen in hospitals in the country.

CRITERIA OF THE ASSESSMENT

13. Assessment of disease burden associated with rubella infection in Ghana.

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1. Contribution to the Health Sector in Ghana.

   Important.

2. Technical Capacity/Manpower Requirement, Material Resource.

   Available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Cost for transportation.

4. Scientific Justification/Impact.

   Local.

   New information.

5. Feasibility of Attainment of Research.

   Available.

EPI VACCINE RESEARCH

Title: The Effect of Aik-C Measles Vaccination on Measles Transmission in the Kassena Nankana District

Principal Investigator: Dr. K. A. Koram; Epidemiology Unit, NMIMR

Co-Investigators: Dr. S. Dunyo, Epidemiology Unit, NMIMR
Dr. F. N. Binka; Navrongo Health Research Centre (NHRC)
Dr. S. O. Sackey; Disease Control Unit, Ministry of Health

Objectives

1. To determine the effect of vaccination at 6 months with AIK-C measles vaccination on measles transmission.

2. To determine the effect of vaccination at 6 months with AIK-C measles vaccination on measles specific mortality and also on total childhood mortality.

Outcome

A Reduction in overall measles transmission in the district.

Reduction in childhood mortality

Reduction in measles specific mortality

CRITERIA OF THE ASSESSMENT

14. The effect of AIK-C measles vaccination on measles transmission in the Kassena Nankana District.

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1. Contribution to the Health Sector in Ghana.

   Very Important.

2. Technical Capacity/Manpower Requirement, Material Resources.

   Available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   AIK-C strain vaccine.

4. Scientific Justification/Impact.

   Global.

   Contribute to policy making in WHO.

5. Feasibility of Attainment of Research.

   Available.

TITLE:

DEVELOPMENT OF POTENTIAL VACCINE CANDIDATE ANTIGENS FOR PROTECTION AGAINST SCHISTOSOMIASIS

Principal investigator: Dr. K. M. Bosompem (Parasitology Unit; NMIMR)

Co-investigators: Dr. B. D. Akanmori (Immunology Unit; NMIMR)
Dr. M. D. Wilson (Parasitology Unit; NMIMR)
Dr. M. E. Aryeetey (Parasitology Unit; NMIMR)
Dr. T. K. Adiku (Microbiology Unit; University of Ghana Medical school)

Japanese Experts/ collaborators: ...

EXECUTIVE SUMMARY:

The NMIMR/JICA phase II project on schistosomiasis made some important achievements for which both the Ghana and Japanese Governments as well as the NMIMR and JICA should be very happy. The most significant of these achievements was the development of a highly sensitive and specific field-applicable dipstick assay for diagnosis of urinary schistosomiasis (See: Bosompem *et al.*, 1996*a*; Amanor *et al.*, 1996*a,b,c*; Bosompem *et al.*, 1996*b* and Bosompem *et al.*, 1997). The dipstick has been successfully tested in the field and shown to have potential for application with tremendous impact on the management of schistosomiasis not only in Ghana, but probably worldwide (Bosompem *et al.*, 1996*b*). In this new project proposal we intend to conduct research with the aim of developing vaccines against schistosomiasis using some of the reagents and tools developed during the phase II project.

Specific objectives:

The specific objectives of this proposal are to:

(1) screen *Schistosoma* genus-specific monoclonal antibodies and their target polypeptides so as to determine protective efficacy and anti-fecundity effects using the hamster model
(2) to establish immunological differences between *S. haematobium* resistant and susceptible individuals in endemic communities in southern Ghana and
(3) to clone and sequence the genes encoding putative *S. haematobium* vaccine candidate antigens.

Justification

The search for a protective antigen against schistosomiasis has been lengthy, partly because most antigens were initially identified in *S. mansoni* because of the relative ease with which this species is adopted to the laboratory. Work on the other two major human schistosomes (*S. japonicum* and *S. haematobium*) was insignificant until just recently that extensive work on *S. japonicum* resulted in a long list of cloned antigens (Waine *et al.*, 1993), thereby considerably improving the chances of developing a vaccine against this parasite (*S.*

japonicum). Unfortunately, studies on *S. haematobium* antigens continues to lag behind (reviewed by, Bergquist, 1995). The widespread endemicity of urinary schistosomiasis in Ghana despite existing control measures calls for more work towards the development of better control strategies. This proposed project seeks to utilize immunological and molecular biological techniques in solving an important parasitological problem.

Project part I: Screening of *Schistosoma* genus-specific monoclonal antibodies for passive protection against schistosomiasis in hamsters

Sixteen *Schistosoma* genus-specific and crossreactive monoclonal antibodies (MoAb) generated during the search for a *Schistosoma haematobium* species-specific MoAb in the phase II project will be screened for protective ability *in vivo*. Hamsters will be injected intraperitoneally with chromatographically purified MoAbs. The animals will then be challenged by exposure to *S. haematobium* infective cercaria and perfused for adult worms after three months. The results obtained will be compared with that of challenged non-immunized control mice. MoAbs with protective ability will be further characterized and the target antigens identified and purified either in the western immunoblot assay or by affinity chromatography. Additionally, some more *Schistosoma* genus-specific MoAbs may be produced using facilities and expertise provided by JICA during the phase II project, and also screened for passive protection as described above

Project part II Testing of various *S. haematobium* polypeptides for protection against urinary schistosomiasis

S. haematobium species and *Schistosoma* genus-specific antigens identified by monoclonal antibodies produced during the phase II project will be used to immunize hamsters so as to determine their protective value. Promising vaccine molecules will be evaluated in different formulations and/or delivery systems so as to achieve enhanced immunogenicity and protective efficacy.

Putative *Schistosoma* polypeptide antigens will be sequenced and the encoding genes cloned and sequenced. Recombinant peptides may be further evaluated.

Project part III Immunological studies of *Schistosoma haematobium* resistant and susceptible individuals in endemic communities in southern Ghana

In phase II of the schistosomiasis project sponsored by JICA, we identified some individuals who appear to be resistant to *S. haematobium* based on their persistent negativity despite continuous contact with cercarial contaminated water.

We shall use immune sera from such individuals alongside sera from susceptible persons in the Western Immunoblot Assay to identify unique *S. haematobium* polypeptides with possible protective value. Identified antigens will be electroeluted and evaluated in hamsters for protective properties using the immunization/ challenge method. Promising peptides will be sequenced and the encoding genes coned and sequenced.

15. Development of potential vaccine candidate antigens for protection against schistosomiasis.

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1. Contribution to the Health Sector in Ghana.

   Indirect, not immediate.

2. Technical Capacity/Manpower Requirement, Material Resource.

   Available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   DNA sequencer.

   Collaboration possibility; molecular biologist.

4. Scientific Justification/Impact.

   Highly qualified experiment in the parasitology.

5. Feasibility of Attainment of Research.

   Probably available.

TITLE: ESTABLISHMENT AND CHARACTERIZATION OF RODENT COLONIES FOR DIAGNOSIS OF INFECTIONS AND ASSAY OF VACCINES

PRINCIPAL INVESTIGATOR: Dr. Phyllis Addo

COLLABORATING UNIT: Virology

JUSTIFICATION:
Enhancement of the health research and delivery system necessitates the enhancement of each component of the system. The animal component though important and useful is currently not well established in Ghana. Utilization of animal systems enhances diseases diagnosis, elucidation of the mode of disease transmission, pathogenesis, effectiveness of putative therapeutic agents, production of biologicals and assay of vaccines and medicines.

In the use of animals for these important aspects of health research and delivery, different results are often obtained in spite of consistency in methodology employed, suggesting inconsistency in animal response. This limitation prevents effective utilization of the animals in disease diagnosis, assay of biological products/medicine and production of biologicals.

This study would seek to (i) eliminate the background noise which generates differences in animal responses by standardizing the rodents most often used in the health research/delivery system and (ii) assess the potential of the standardized animals in the diagnosis of selected diseases and assay of EPI vaccines and other important but non-EPI vaccines.

OBJECTIVES:

1. Establish genetically pure and microbiologically acceptable animals for diagnostic and assay purposes.

2. Establish new animal cell lines and determine their viral susceptibility.

3. Establish a biologic quality control facility for human and animal vaccines to enhance the disease prevention and control efforts of the Ministry of Health.

RESEARCH APPROACH:
Commonly used rodents such as mice, rats, hamsters and guinea pigs and one novel laboratory animal, the grasscutter will be used in the study.

i) The animals will be produced and maintained employing standard breeding and maintenance techniques for inbred and non-inbred

animals of specific pathogen free status. The genetic and microbiologic qualities of the animals will be standardized through regular and systematized monitorings using the International Council for Laboratory Animal Science (ICLAS) characterization procedures. The animal environment namely: ambient temperature, relative humidity, air changes; rooms; corridors, cages, feeding troughs, water bottles, feed, disinfection and sterilization programmes will be monitored appropriately.

ii) The biologic response of the animals with respect to consistency, validity and reproducibility of result will be assessed with the application of selected virological diagnostic procedures. The following viruses will be investigated: Yellow fever, Herpes simplex, Rubella, Dengue fever, Hepatitis C and ascites producing viruses.

iii) Organs such as the heart, lung, and kidney of newly weaned and young adult grasscutters will be collected and processed into cell suspensions under aseptic conditions. Centrifugation, incubation and subculturing will be done using standard cell culture techniques until established cell lines are obtained.

The established cell lines will be characterized with respect to their morphology and growth curve. Tests will be made for any latent infectious agent. Cultures of the cells will be examined for hemadsorption and their fluids for hemagglutination reactions. The cells will be investigated for their susceptibility to selected viruses as well as sensitivity to and production of interferon. The following viruses will be investigated: Measles, Yellow fever, Rubella, Adeno, Mumps, Entero and Herpes.

iv) The biologic response of the animals with respect to consistency, validity and reproducibility of result will be assessed with the application of selected vaccine quality control procedures namely: Abnormal toxicity, stability and reversal test, absence of virulent mycobacteria, identity and potency. The WHO vaccine quality control procedure will be employed. The following vaccines will be investigated: EPI, Rabies and Newcastle vaccines.

These investigations will be conducted to enhance the diagnostic capability of the Institute and establish a vaccine quality control facility in the country for better health delivery.

CRITERIA OF THE ASSESSMENT

16. Establishment and characterization of rodent colonies for diagnosis of infections and assays of vaccines.

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1. Contribution to the Health Sector in Ghana.

   Indirect.

2. Technical Capacity/Manpower Requirement, Material Resource.

   Available.

3. Collaboration Possibility with Japanese side/Expert Training Technical Equipment and Local Cost.

   Animal laboratory.

4. Scientific Justification/Impact.

   Interesting.

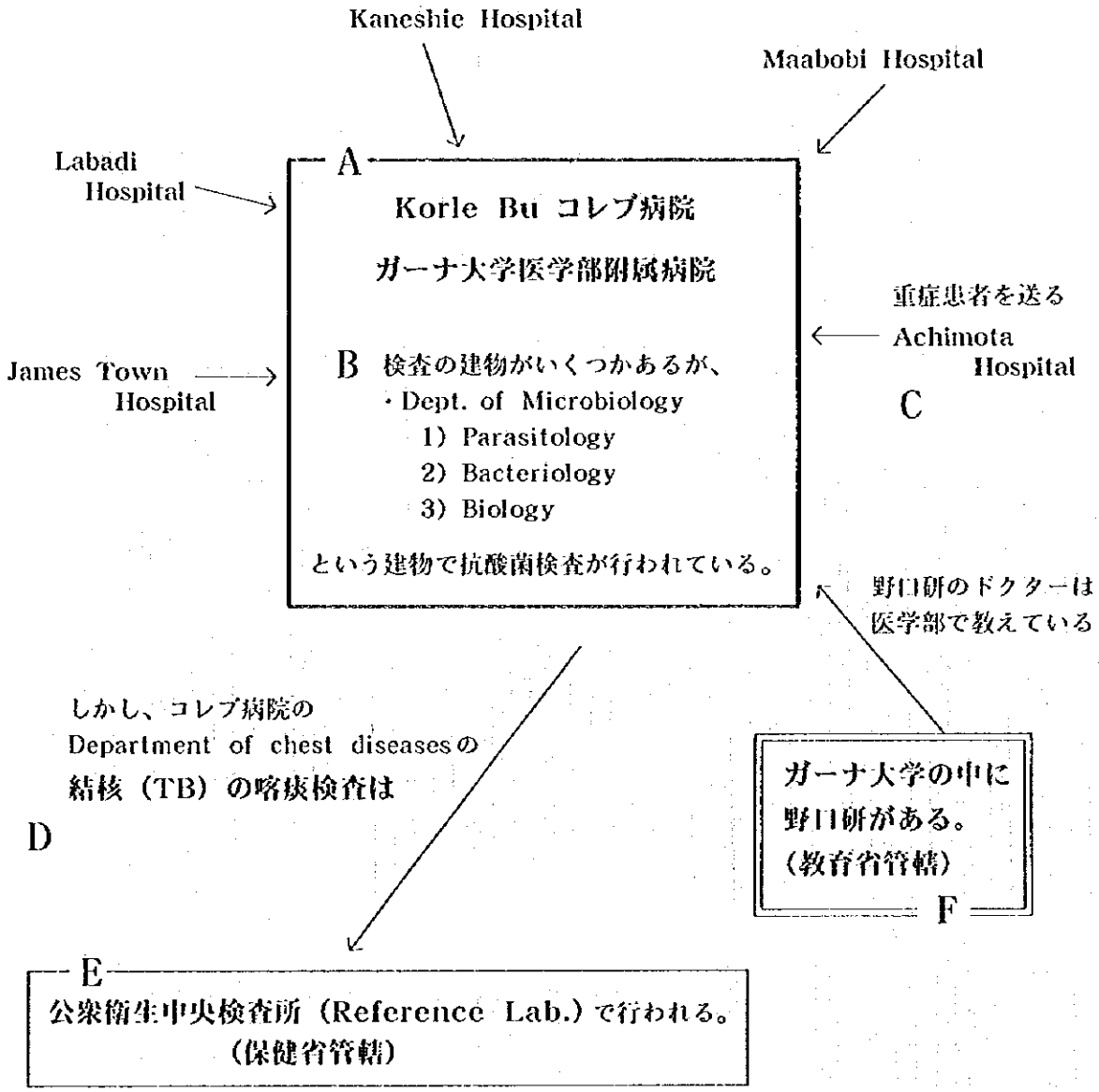
5. Feasibility of Attainment of Research.

   Available.

④ アクラ市内の病院組織（結核分野）

アクラ市内の病院組織

コレブ病院のサテライト病院（Poly Clinic）がいくつかある。



A コレブ病院（ガーナ最大の総合病院）

1) コレブ病院の外観はイギリス風の非常に立派で大きな病院で、2000ベッド位はありそうだが内部は暗くて古い。

2) ガーナ大学医学部の附属病院になっている。

B コレブ病院内のMicrobiology検査部門の建物

1) コレブ病院のDepartment of Chest Diseases以外の抗酸菌の塗抹検査はここで行われている（コレブ病院の組織がはっきりしない）。

2) 建物は2階建てでその2階で尿・検便・髄液・血液などの細菌・寄生の検査が行われている。

3) 一般細菌の培養も行われているが乾熱・オートクレーブ・蒸留水製造装置など全て古いものばかりで、顕微鏡はここでも1台で尿・糞便・髄液・喀痰の全ての検査を行っているため、コンデンサーが壊れやすいとのこと。顕微鏡を申請しても予算が他にいってしまい、ここにはこない。

4) 建物がとにかく古く、窓が開いているがシャーレに培地を作り、エアコンはきいていない。

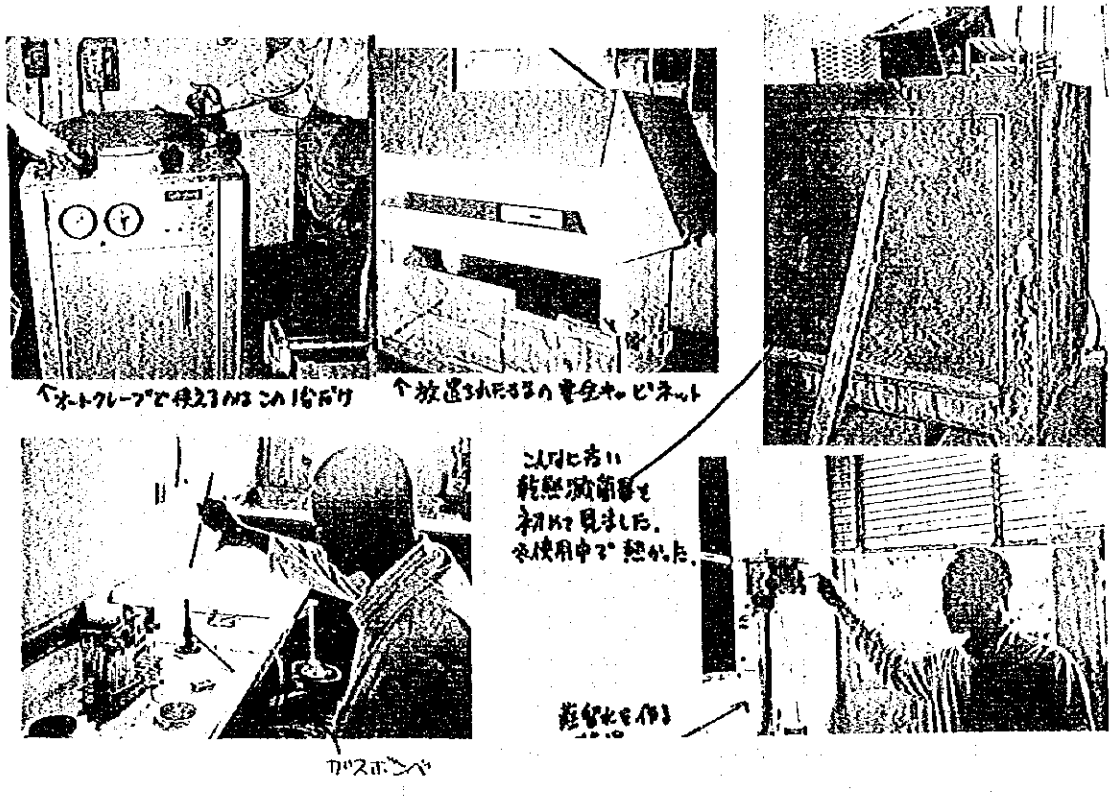
5) 安全キャビネットがアメリカから供与されたが重くて2階に上げられず1階の入り口に放置。

6) 1日のチール・ネルゼン染色の検体数は平均12検体。（喀痰だけではない）

塗抹標本の評価

塗抹の作り方	○	楕円で丁度よい広さに広げられていた。ゴミが目立った。
標本の染まり方	○	抗酸菌は赤・細胞は青。染色液はNTPからもらっている。
顕微鏡の性能	△	1台で寄生虫から細菌まで見るため壊れやすい。
標本の保存	△	整頓されていたようだ。

○＝よく実施されている、△＝注意が必要だが検査に支障なし、×＝再指導の必要がある



C Achimota Hospital （Achimota地区にある病院）

1) 野口研から車で15－20分程の所にある病院。院長は女性医師。

2) 検査室はひとつで尿検査・検便・血液検査・抗酸菌の塗抹検査などが行われている。

3) 検査技師長はDANIDAの研修を受けたとのことで内容を聞いたが「学校でならったことを繰り返しただけ。」とのこと。研修テキストはなかったとのこと。

4) チールネルゼン染色を行うところ見たが、染色は丁寧で基本通りだった。標本も標本箱に順序よく整理されていた。染色液やスライドグラスなどは国家結核対策プログラム(NTP)からくる。

5) 顕微鏡は1台で古いが比較的いい状態に保たれている。(5年間使っているため新しいのが欲しいとのこと。日本では顕微鏡は10年・20年使えるがいろいろな検査に使うとそれだけ消耗が大きい)

6) 院長から「安全キャビネットがないけれど染色は安全ですか？」ときかれたが、「塗抹検査だけなら技術で安全は保たれるが、それを行う人次第。」と回答した。

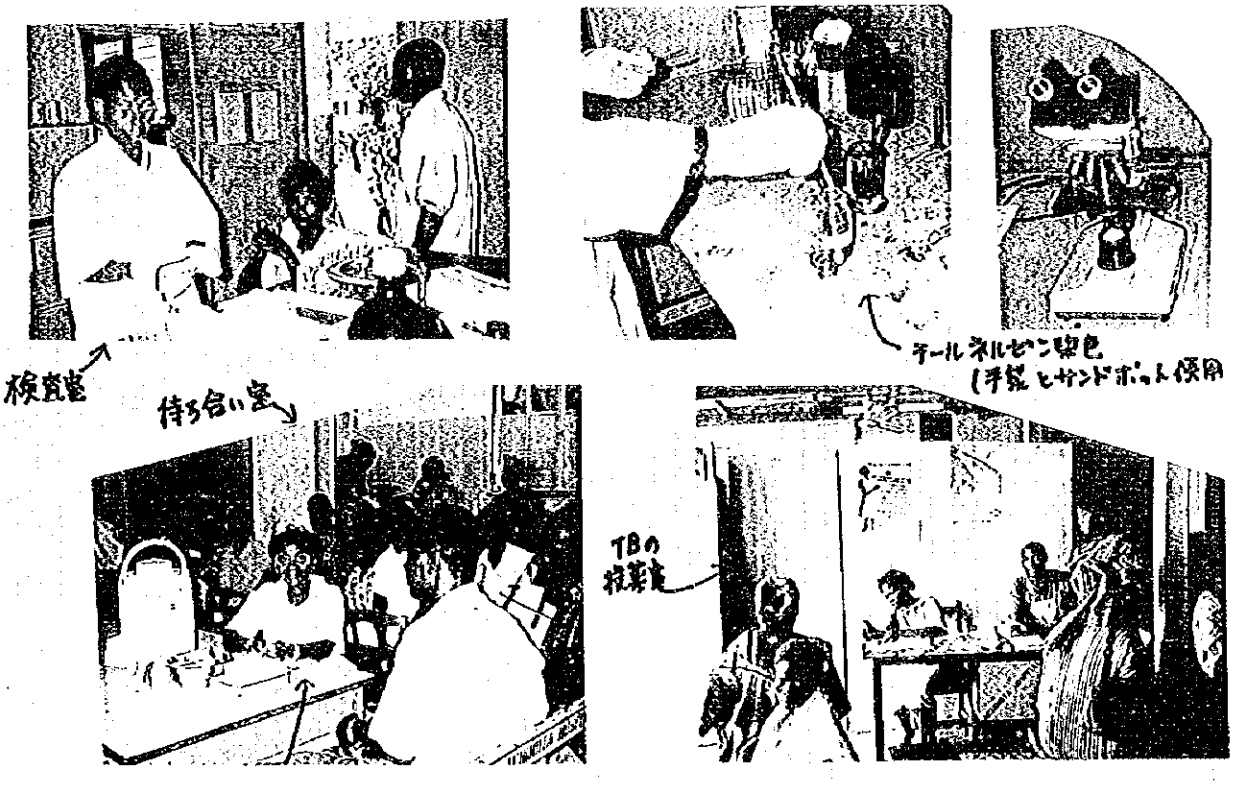
※検査技師の安全のために安全キャビネットについての情報が広がるのはいいことですが、途上国で塗抹検査を行うのに安全キャビネットが必要と思われては途上国では塗抹検査のできる検査室がなくなる。安全な技術と正しい知識を広めることが大切と思われる。

7) 検査台帳に「Defaulter」と1箇所あり、「看護婦が台帳を調べてdefaulterを調べている。」とのことだが、もっとたくさんの患者が治療から脱落していると言う人もいる。

8) 検体数は去年は113人分（各患者ごとに3枚ずつ塗抹標本を作製）を検査して、3枚のうち少なくともどれかひとつ塗抹陽性になったのは25名だった。

塗抹標本の評価

塗抹の作り方	△	塗抹面が大きいがはみ出る程ではない。ゴミが目立った。
標本の染まり方	○	抗酸菌は赤・細胞は青。染色液はNTPからもらっている。
顕微鏡の性能	△	古いが検査できる。
標本の保存	○	きちんと標本箱に整理されている。



D コレブ病院の Department of Chest Diseases

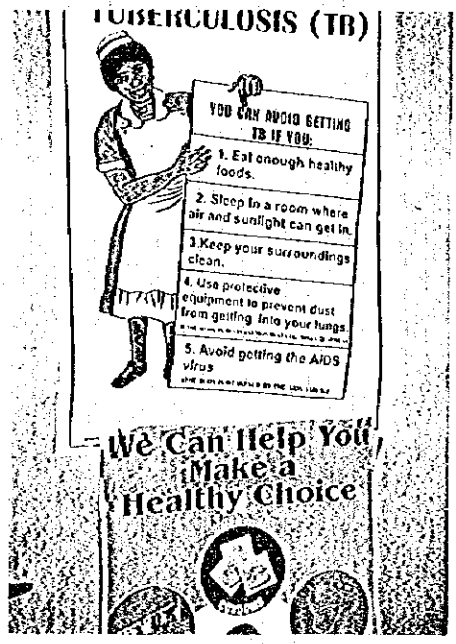
1) 男性用40床、女性用14床の結核病棟（病棟は暗いが、テレビがあった）

2) 結核患者でも特に重症患者を収容している。

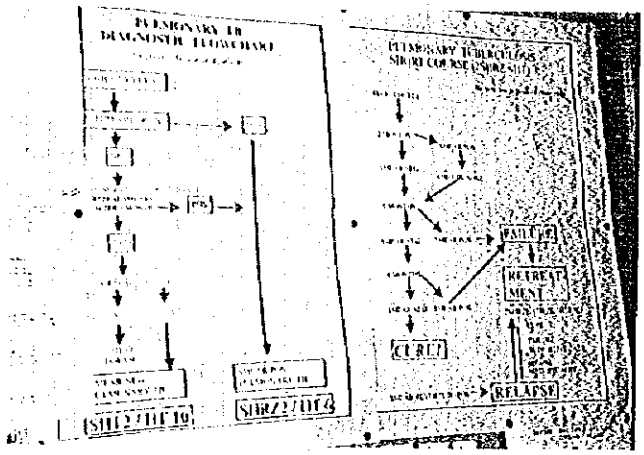
3) 喀痰は1人3回採取し、1日60－70検体あるが、検査室の窓際においてある古い顕微鏡は壊れて使えず、部屋の真ん中に新しいオートクレーブが飾るように置いてあった。（培養用とのことで使っていない。）

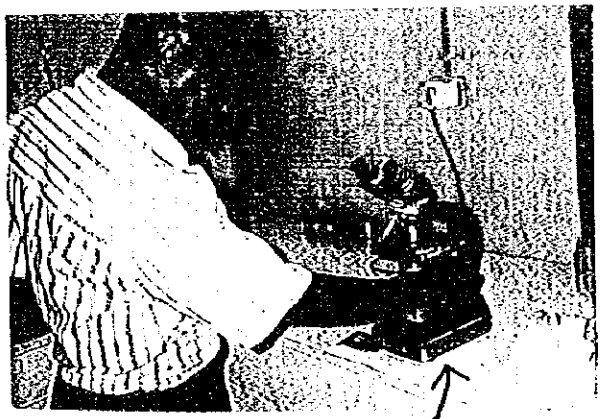
4) 培養用の部屋があると言うのでみたが、内部は埃だらけの倉庫で3－4年前にWHOからもらったという器材が埃にまみれていた。ガラス器材とベンチらしきものがひっくり返っていた。とてもこれだけの器材では培養を開始できない。

5) このため喀痰は同じ敷地内にある公衆衛生中央検査所に送る。

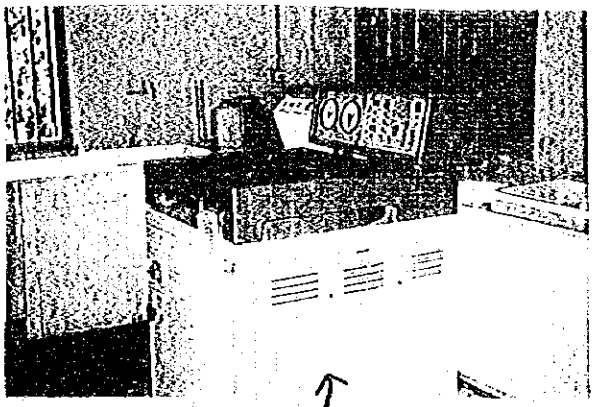


TBに関するポスター





これれている顕微鏡



検査室の中央にオートクレーブ

E 公衆衛生中央検査所

1) 地方から検体がくると言うが、ほとんどがコレブ病院のDepartment of Chest Diseasesの検体のと思われる。

2) USAIDから供与された寒天培地で培養する器材がある。
- 炭酸ガスインキュベータ
- 安全キャビネット
- オートクレーブ
- 乾熱
- 蒸留水製造装置（電圧が合わずに放置されているものと使用できるものもある）
- 遠心機
- フラン器（大小）
- 冷凍庫（大、壊れていた）

3) 塗抹検査
- チールネルゼン染色標本
  a）smear全体に喀痰が広げられていて、まるで病理のsmearのようだ（標本を作るように2枚のスライドグラスを重ねて標本を引くようにして作った？）
  b）顕微鏡の度が強い＝顕微鏡を覗いた時に目が痛くなった。あれで1日70枚の標本を1人で観察していると思えない。強陽性だけしかひろっていない？ チェストクリニックの喀痰検査結果台帳も強陽性が目立った。＋が少ないと言うことは、大量排菌者の検査ばかりなのか？ 微量排菌を見逃しているのか確かめる時間がなかった。
  c）器材と染色液の供給はNTPに申請するともらえるが、凝固器は何回もいっているがもらえない。
  d）蛍光顕微鏡でみて陽性標本をZ－Nで確認しているというが、蛍光染色で陽性の標本を実際みせてもらったらごみだった。これをZ－Nで確認しているとのことだからたぶん間違ったデータを報告していないと思うが確認できなかった。
  e）実験台の引き出しに無造作に山のように積み重なった塗抹標本がたくさんあった。

塗抹標本の評価

塗抹の作り方	×	喀痰がスライドグラス面いっぱいに不均等に塗抹されていた。
標本の染まり方	○	抗酸菌は赤・細胞は青。染色液はNTPからもらっている。
顕微鏡の性能	×	度がきつくて10秒と見ていれなかった。
標本の保存	×	山のように積み重ねているだけ。整理整頓が全くされていない。

コメント：凝固器がないため培養が始められないと所長に言われたが、凝固器は卵培地（L－J＝レーベンシュタインーイエンセン培地・小川培地）を作るためで、アメリカのCDCの方法なら

7H10寒天培地で分離培養から薬剤感受性試験を行うため今の設備で十分に

培地を作って培養と薬剤感受性試験ができる。

しかし、ここで行われている塗抹検査の精度を考えるととても

培養をやれる状況ではない。

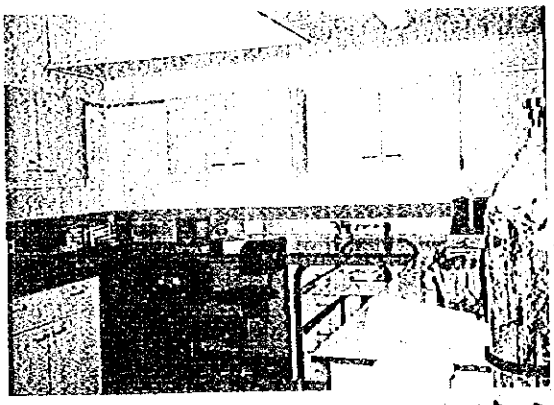
※CDCの方法は分離培養を寒天培地と卵培地を両方使い、薬剤感受性試験を寒天培地（今はBACTEC）で行うとしている。

コレブ病院でもこの検査室でも培養の開始が切望されているが、この施設では

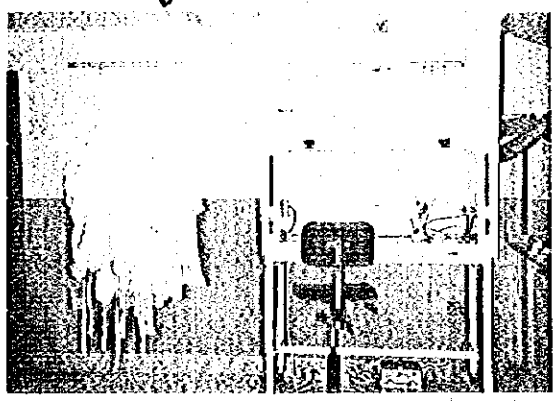
培養を始める前にまず塗抹検査の精度管理をやった方がいいと思う。

分離培養の方法と使用培地についてCDC・WHO・日本のいずれを選ぶかは別紙1を参照

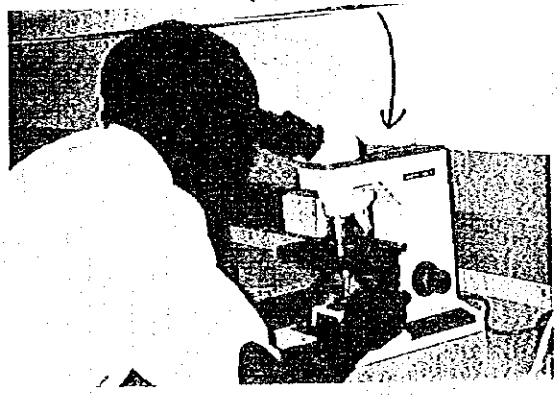
抗酸菌検査室内

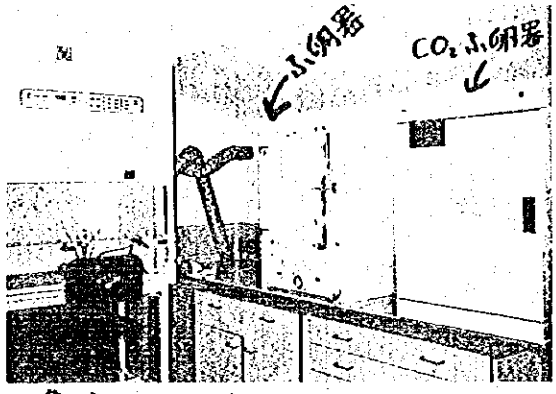


白衣



チールネルゼン染色の鏡検





安全キャビネット

蛍光顕微鏡

大型ふ卵器

モニターひさし装置

F 野口記念医学研究所

1) 野口研では抗酸菌検査が行われていないため技術のチェックができなかった。

塗抹標本の評価

塗抹の作り方	?	なし
標本の染まり方	?	染色液は神谷先生から染色液セットをもらった。作っていない
顕微鏡の性能	○	JICA供与の顕微鏡がある
標本の保存	?	なし

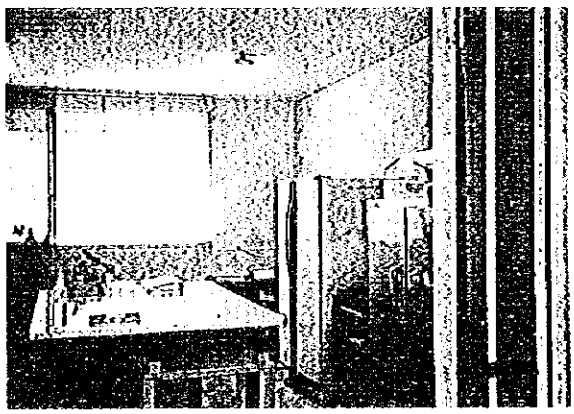
2) 今まで標本の染色をやったことはあるが塗抹検査の経験がない。

3) ガーナの他の施設で塗抹検査が行われているため他の施設の精度管理も外部施設としてできなければリファランス・ラボにはなり得ないと思われる。(別紙2を参照)

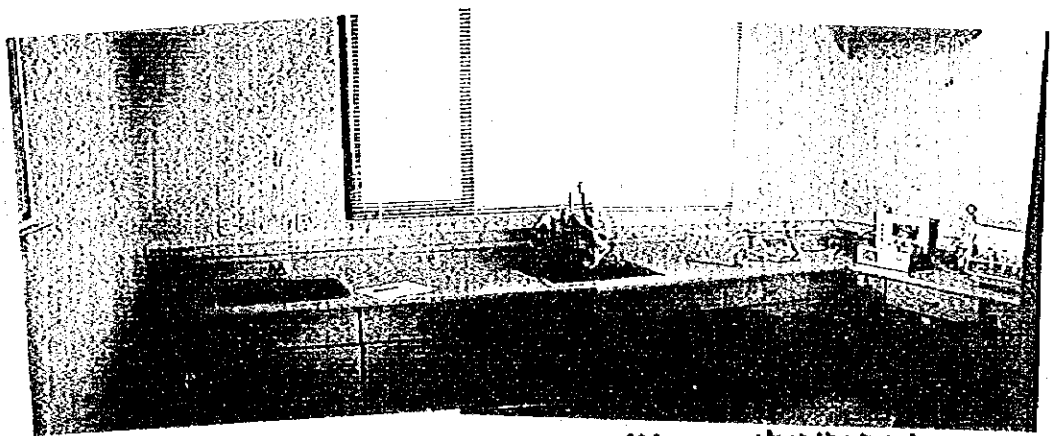
4) 現地から培養をCDCの方法でという提案があったが設備の面となれた人材がいないということで初めはピペットを使用しないWHOのSwab法か小川法のSwab法が適当と思われる。(別紙1を参照)

> 塗抹検査を野口研はいままでやっていないため
>
> 培養検査の前にまず塗抹検査とその精度管理をやらなければならない。

塗抹検査に必要な器材は別紙3を参照
培養検査に必要な器材は別紙4を参照



細菌研究室



97年10月から抗酸菌検査室になる予定の部屋

別紙　1

世界の分離培養方法を比較

検体を培地に接種（雑菌処理・喀痰の均一化）する方法：

方法名	雑菌処理	ホモジナイズ（撹拌）	遠心沈殿	中和	ピペット使用	使用培地
小川ースワブ法	○	ー（かき混ぜる	ー	ー	ー	小川培地
WHO-スワブ法	○	ー（かき混ぜる	○	○	ー	Ｌ－Ｊ培地
小川法	○	○	ー	ー	○	小川培地
CDC法	○	○	○	○	○	Ｌ－Ｊ培地

○＝必要　　ー＝必要なし

小川培地とレーベンシュタインーイエンセン培地（Ｌ－Ｊ）に成分上ではほとんど違いはないが、ｐＨが違いほぼ中性のＬ－Ｊ培地では検体の中和が必要なため遠心沈殿を行う。

撹拌・遠心沈殿・ピペット作業が検査技師にとって危険な作業と言われ、抗酸菌培養に慣れない人が（特に安全キャビネットのないところでは）小川法のスワブ使用から始める方がよいと思われる。

ただし、薬剤感受性試験は他の国と比較を考えて、Ｌ－Ｊ培地使用のＰｒｏｐｏｒｔｉｏｎ法。

卵培地と寒天培地：

卵培地（小川培地・Ｌ－Ｊ培地など）

利点　1）卵さえあれば他の成分は入手が簡単
2）試験管は使用後洗って再使用できる。
3）口が小さいため技術的汚染が少ない。
4）発育した菌の観察が容易

欠点　1）培地作製で凝固器が必要

寒天培地（７Ｈ１０寒天培地など）

利点　1）培地作製が簡単（オートクレーブがあればできる）

欠点　1）培地作製でエンリッチメントが必要。（シャーレ１０枚で１２００円）
2）空気に当たる面が大きいため技術的汚染が起こりやすく、キャビネット内で蓋を開ける。
3）寒天は乾燥しやすいため炭酸ガスフラン器が必要（雑菌汚染を起こしやすい）
4）発育してきた菌の集落の観察がしにくい

上記の理由から卵があれば発展途上国では卵培地が使いやすいと思われる。

別紙　2

塗抹検査の精度管理

(Ｑｕａｌｉｔｙ　Ｃｏｎｔｒｏｌ)

1）抗酸菌は抗酸菌染色によって他の菌から分けられる菌であるため抗酸性染色が基本となる。喀痰の塗抹検査は結核菌検査における意義が大きいにもかかわらず、抗酸菌検査の中で一番技術移転と精度管理が難しい検査である。

2）塗抹検査の講義などのために見本を作る時はあらかじめＡＦＢ陽性・陰性のわかった喀痰を使用してＳｍｅａｒを作り強陽性検体を使用するため「見落とし」がなく、業務として検体を見るときは特に菌数の少ない場合、「菌の見落とし」と「ゴミを抗酸菌と見間違える」というのが問題。

3）抗酸菌用培地には抗酸菌だけでなく弱抗酸性菌である Nocardia や Rhodococcus、そして一般細菌の一部も発育するため染色検査は必須で培養の前に塗抹検査のできるのが前提となる。

方法：

1）External QC=　外部の施設（Reference Laboratory）による精度管理

- 巡回指導で染色手技を確認、器材の点検、検査室の様子を見るなど
- 現地で作製された標本と結果を持ち帰り、Reference Laboratory の技術者による Double-check を行い、結果を比較する。

2）Internal QC=各施設内で行う自主的な精度管理

- 染色液作製時に品質確認を行う
- 検体の採取、保存などを適当かどうかみる
- ２名以上の検査技師による Double-check を行う
- 他　人材教育、器材点検など

この Double-check を行うためには：
- 第一の鏡検者の見落とした菌を捜す（＋が見落とされやすい）
- ゴミを間違ってＡＦＢとした例を捜す（途上国の喀痰検査にはよくゴミが入っている）

このため Double－check の第２の鏡検者は

「見落とされやすい陽性の検体」と「陽性と見間違われやすい陰性の検体」を検出できる鏡検に熟練した技師でなければできない。

野口研に最低一人は必要である。

別紙　3

野口研で塗抹検査

塗抹検査も培養の部屋で行う。(安全キャビネット使用が望ましいため)

必要なもの：

1）器材

a)顕微鏡	結核菌用がなし
b)オートクレーブ	結核菌用がなし（培養用と共用できる）

※野口研では１００Ｖと２３０Ｖの両方が使用できる。

2）試薬　　野口研に

a)塩基性フクシン	なし	
b)フェノール	？	(十分にあるかどうかわからない)
c)硫酸（又は塩酸）	？	(十分にあるかどうかわからない)
d)エタノール	？	(十分にあるかどうかわからない)
e)メチレンブルー	なし	
f)キシロール	？	(十分にあるかどうかわからない)
g)蒸留水	あり	
h)イマージョンオイル	あり	

3）他

a)標本箱	なし
b)洗浄瓶	なし
c)１ｇの計れる天秤	あり
d)スライドグラス	？
e)結核菌用ニクロム線	なし
f)サンドポット	作れる
g)ガスバーナー	あり
h)メスシリンダー	あり
i)三角フラスコ	？
j)ロート	？

別紙　4

野口研で培養検査

抗酸菌検査室で検体接種・培養と培地の滅菌までできるようにする。

必要なもの：

1）培地作りに必要な器材　　野口研に
- a)凝固器（卵培地用）　なし
- b)蒸留水製造装置　ある
- c)1ｇ単位の計れる天秤　ある
- d)乾熱滅菌器　ある

2）培養に必要な器材　　野口研に結核用として
- a)安全キャビネット　なし
- b)フラン器　なし
- c)オートクレーブ　なし

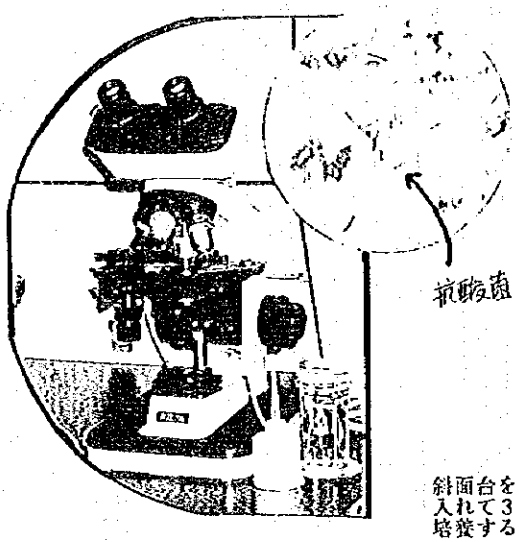
3）他ガラス器具など
- a)検体用ピペット（Dr.Akpedonuはﾃﾞｨｽﾎﾟを使うと言っている）
- b)試験管　なし
- c)ゴムキャップ　なし
- b)メスシリンダー　あり
- e)三角フラスコ　？
- f)斜面台　なし
- g)試験管立て　なし
- h)　他

4）試薬　　野口研に十分に
- a)第一燐酸カリウム　なし
- b)グルタミン酸ナトリウム　なし
- c)グリセロール　なし
- b)マラカイトグリーン　なし
- e)卵　あり
- f)水酸化ナトリウム　あり
- g)硫酸マグネシウム　？
- h)クエン酸マグネシウム　？
- i)アスパラギン　？

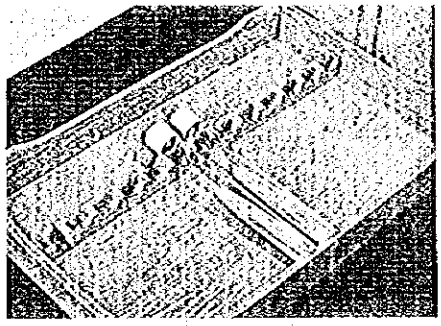
抗酸菌検査の流れ

喀痰を採取 → 塗抹検査 → 喀痰接種

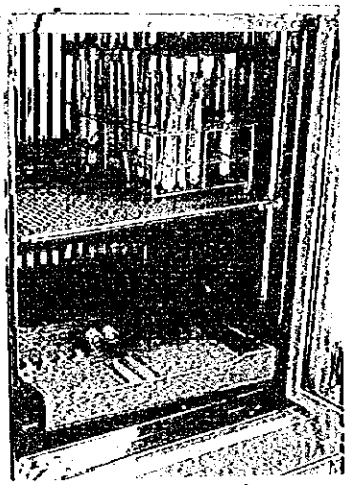
チール・ネルゼン染色法
(顕微鏡検査)



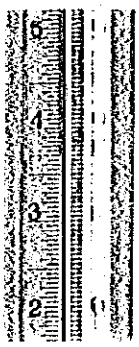
喀痰を培地の表面に流し込み、斜面台に並べる。



培養

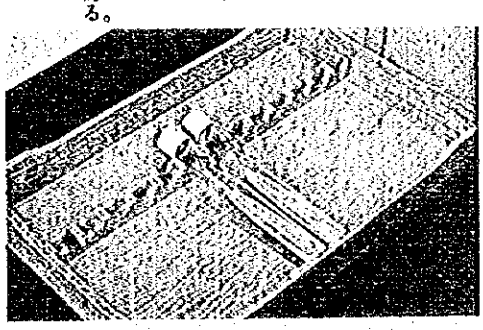


37 ℃に設定する

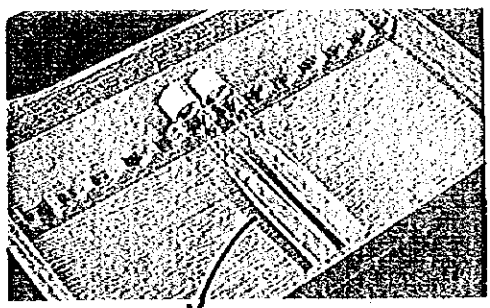


斜面台をふらん器に入れて3から8週間培養する。

8週間培養しても抗酸菌の発育の認められない場合を培養陰性とする。



接種した喀痰に抗酸菌が含まれていれば3から8週間で集落（コロニー）を形成する。



発育してきた抗酸菌のコロニーを使って

- 薬剤感受性試験
- 同定試験

⑤ 第二国研修要望調査表

QUESTIONAIRE ON FY1997 IN-COUNTRY TRAINING PROGRAMME

Noguchi Memorial Institute for Medical Research

I. Summary of Programme

a) Title of Course Training in Laboratory Diagnostic Techniques in HIV/AID and STDs.

b) Implementing Agency Noguchi Memorial Institute for Medical Research

c) Ministry in charge of the programme Ministry of Education

d) Medium and Long-term objectives (Implementation) Control of HIV/AIDS and other sexually transmitted diseases.

e) Short-term Objective (Participant) Acquisition of diagnostic techniques in HIV/AIDS and STDs.

f) Course Content : Lectures, demonstrations and practicals on HIV/AIDS and STD diagnostic methods and assays.

g) Outline of Course Content : Diagnostic tests and assays for HIV (1-2) hepatitis, chancroid chlamydia, gonnorrhoea, syphillis.

h) Target of participant : Medical laboratory technicians at Regional and District levels.

i) Qualification of participant

i)-1. Age	Less than 40 years
i)-2. Experience	≥3 years in medical laboratory
i)-3. Academic	diploma in medical laboratory or equivalent

j) Duration of programme (from, until, for how many days) 3 Weeks

k) Number of Participant 12

l) Duration of Cooperation (maximum 5 years) 5 years?

2. Background of Request

a) Background HIV/AID and STD's have now become emergent major health problems in Ghana and and Sub-Saharan Africa affecting the most productive segment of the society.

b) Previous Assistance from Japan /Project, Grant Aid, etc.

Type of Programme	Duration of Cooperation	Title of project	Relation to this programme
1 Project type 2 Cooperation 3 4 5 6 7	1980 - 1985 1986 - 1991 1991 - 1997	4th Project Noguchi Memorial Institute Phase I Phase II	Support of research on infectious diseases.

c) Cooperation with another donor

l) Justification of Training needs : In-service training course as requested above would strengthen laboratory diagnosis of HIV/AIDS and STD particularly at the district and regional levels and also considerably improve blood transfusion safety.

3. Management of Programme
a) Experience of management on training programme : Noguchi Institute/WHO/JICA Third Country Training Programme on Vaccine Potency Testing and Polio Diagnostic Procedures.
b) Total number of Lecturer 6

c) Number of Lecturer for this programme : 4 - 6

d) Qualification of Lecturer : MSc, PhD, MRCP Path.

e) Condition of equipment and facilities : Major equipment and facilities available

f) Anual Budget of Implementing Agency (US$) 300,000.00

g) Direct Budget of the programme (US$) 30,000.00

h) Accommodation(, type, room rate,) University Guest House, Legon

i) Medical care for participant : to be provided

4. Assistance from Japan
a) Necessity of Training Advisor(field, duty, duration, number)

b) Necessity of Expert(field, duty, duration, number)

c) Budget in Ghanaian side
c)-1. Expenses for administrative staff
c)-2. Expenses for water, electricity
c)-3. Expenses for comsumable on Administration
c)-4. othe expenses

QUESTIONAIRE ON FY1997 IN-COUNTRY TRAINING PROGRAMME

Noguchi Memorial Institute for Medical Research

1. Summary of Programme

a) Title of Course : Laboratory diagnosis of parasitic diseases.

b) Implementing Agency : Noguchi Memorial Institute for Medical Research, University of Ghana

c) Ministry in charge of the programme : Ministry of Education

d) Medium and long-term objectives (Implementation): Control of parasitic diseases in Ghana.

e) Short-term Objective (Participant) : Aquisition of laboratory diagnostic methods in the diagnosis of parasitic diseases in Ghana.

f) Course Content : Laboratory methods and techniques in the diagnosis of malaria, schistosomiasis, onchocerciasis, filariasis and intestinal parasites.

g) Outline of Course Content : Lectures, practicals and field visits

h) Target of participant : Laboratory technicians of district and regional hospitals

i) Qualification of participant

i)-1. Age : below 40 years

i)-2. Experience : ≥3 years in medical laboratory

i)-3. Academic : diploma in medical laboratory or equivalent

j) Duration of programme (from, until, for how many days) : 3 Weeks

k) Number of Participant : 12

l) Duration of Cooperation (maximum 5 years) : 5 years?

2. Background of Request

a) Background : Parasitic diseases contribute significantly to disease burden in Ghana especially in the rural areas where the majority of people live

b) Previous Assistance from Japan /Project, Grant Aid, etc.

Type of Programme	Duration of Cooperation	Title of project	Relation to this programme
1 Project type 2 Cooperation 3 4 5 6 7	1980 - 1985 1986 - 1991 1991 - 1997	4th Project Noguchi Memorial Institute Phase I Phase II	Support of research on infectious diseases.

c) Cooperation with another donor

d) Justification of Training needs : Training to enhance laboratory diagnostic capabilities at district hospital levels on the listed parasitic endemic diseases will greatly benefit the rural population.

3. Management of Programme

a) Experience of management on training programme: Noguchi Institute/WHO/JICA Third Country Training Programme on Vaccine Potency Testing and Polio Diagnostic Procedures

b) Total number of Lecturer: 6

c) Number of Lecturer for this programme: 4 - 6

d) Qualification of Lecturer: MSc, PhD, MRCP Path.

e) Condition of equipment and facilities: Major equipment and facilities available

f) Anual Budget of Implementing Agency (US$): 300,000.00

g) Direct Budget of the programme (US$) 30,000.00

h) Accommodation(, type, room rate,) University Guest House, Legon

i) Medical care for participant to be provided.

4. Assistance from Japan

a) Necessity of Training Advisor(field, duty, duration, number)

b) Necessity of Expert(field, duty, duration, number)

c) Budget in Ghanaian side

c)-1. Expenses for administrative staff

c)-2. Expenses for water, electricity

c)-3. Expenses for consumable on Administration

c)-4. othe expenses

⑥ 野口記念医学研究所カウンターパート・リスト

COUNTERPART LIST AS 31ST MARCH 1997

NAME	AGE	POSITION	JOB DESCRIPTION
VIROLOGY UNIT			
Dr. M. Osei-Kwasi	55	Res. Fellow	EPI- Related Activities, HIV
Prof. N.K. Ayisi	49	Associate Prof	HIV, Antiviral Chemotherapy
Dr.J.A.M. Brandful	41	Res. Fellow	HIV
W.K. Ampofo	38	Prin.Res.Asst.	HIV
S. Aidoo	35	Snr.Res.Asst.	HIV, EPI ect.
Kofi Odoom	32	Snr.Res.Asst.	HIV, Measles, Polio and others
J.S. Barnor	40	Snr.Technician	HIV, Measles, Polio and others
J. Arthur-Quarm	34	Snr.Technician	Measles, Polio, HIV and Serology
S. K. Dumedah	47	Tech.Ass.Gd.II	General Technical Assistance in the Lab

COUNTERPART LIST AS AT 31ST MARCH 1997

NAME	AGE	POSITION	JOB DESCRIPTION
BACTERIOLOGY UNIT			
Dr.Mrs P.Akpedonu	46	Snr.Res.Fellow	Administration of the Unit, preparation of proposal and application for funding. Research activities and laboratory work, and preparing reports etc
D. Agbodaze	49	Res. Fellow	Preparation of research proposals, research activities,and preparation of final reports, etc.
H.E.K. Longmatey	49	Pri.Technician	Collection of blood samples, DNA-DNa hybridisation & tissue culture, etc.
A.S.Y. Ablordey	33	Snr.Res.Asst.	Stool, media preparation, isolation of enteropathogens, storage of E.coli for DNA-DNA hybridisation and tissue culture.
Mrs D.Yeboah-Manu	31	Snr.Res.Asst.	Food Microbiology
K. Owusu-Darko	31	Technologist	Media Preparation, Inoculation counting Spinning of food for detection of specific enteropathogen, storage of E.coli for DNA-DNA hybridisation and tissue culture.
S. B. Owusu	52	Snr.Technician	Glassware preparation and general administration of the lab.
E. Yeboah-Ansah	30	Snr.Res.Asst.	Field work
V. Agyiri	27	Data E.Clerk	Data Entry

COUNTERPART LIST AS AT 31ST MARCH 1997

NAME	AGE	POSITION	JOB DESCRIPTION
IMMUNOLOGY UNIT			
Dr. B.D. Akanmori	39	Snr.Res.Fellow	Vaccine(APDT, Measles) Schistosomiasis Diarrhoea & Malaria
Dr. J. Kurtzhals	37	Visiting Res. Fellow	Malaria
Ben Gyan	36	Res. Fellow	Malaria
D. Dodoo	35	Prin.Res.Asst.	Malaria
Mike Ofori	29	Snr.Res.Asst.	Malaria
M. M. Addae	48	Supt.Technologist	Vaccine(Measles), Diarrhoea, Malaria
A. S. Hammond	36	Snr.Technician	Vaccine(APDT, Measles), Diarrhoea
Enid Owusu	33	Technician	Vaccine(APDT & Measles), Malaria
F. Owusu	37	Lab. Assistant	Vaccine, Diarrhoea & Malaria

COUNTERPART LIST AS AT 31ST MARCH 1997

NAME	AGE	POSITION	JOB DESCRIPTION
EPIDEMIOLOGY UNIT		—	
Dr. E.A. Afari	57	Snr.Res.Fellow	Manages EPI Unit, Initiates research protocols in collaboration with other researchers, Analysis of data and report writing.
Dr. K.A. Koram	41	Res. Fellow	Initiates research protocols, Epi research, Analysis of data & reporting of findings.
Dr. S. Dunyo	39	Snr.Med.Offr. (M.O.H.)	Research on diseases of national importance, Analysis and reporting of research projects.
Mrs A.S. Assoku	55	Chief Nur.Offr	Field activities in Vaccine, Malaria, handles & treats minor ailments etc.
G.E. Mensah	38	Prin.Res.Asst.	Manages Computer section, overseeing the statistical analysis of research data.
J. E. Fenteng	45	Prin.Tech.	Field activities in Malaria, APDT, preparation of lab samples for storage, Data management.
C. K. Attiogbe	48	Technician	Prepares all field lab materials for reading and storing for future reference.
A. Ismaela	28	Prog.Assistant	Statistical analysis of data; manages the computer

NAME	AGE	POSITION	JOB DESCRIPTION
EPIDEMIOLOGY UNIT			
M.C. Bonsu	46	Tech.Asst. Gd. II	Organisation of field activities in malaria and APDT, preparation of lab materials for storage , data management,etc.
Collins Ahorlu	29	Snr.Res.Asst.	Initiation of social science behavioural aspects of research topics of interest, analysis and writing up of social science projects, etc.
E. Dwamena	40	Public Health Nurse	Field activities in vaccine, measles, ADPT, and malaria. Treatment of minor ailments of study participants, etc.
C. Amoabeng	25	Data Entry Clerk	Receives all the field data, makes the necessary corrections and enters them into the computer. Doubles up as a secretarial assistant for the unit

⑦ 野口記念医学研究所研究計画1997-2000

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH RESEARCH AND DEVELOPMENT PROGRAMME 1997-2000

RESEARCH POLICY AND DIRECTION

Research objectives of the Noguchi Institute were redefined in 1984 following a joint Ghana/JICA review of the Institute's activities. As a consequence, the Institute was mandated to focus its research activities on priority health problems in support of programmes for the control of communicable diseases and malnutrition in Ghana.

The following specific guiding principles were defined:

- to research into problems of communicable diseases and nutrition
- to provide training opportunities for postgraduate students in medical research
- to provide specialized diagnostic and monitoring services in support of public health programmes.

The 1991-1995 Five Year Research and Development Programme of the Institute (published in December 1990) was developed within the framework of the above guiding principles. It's thrust focused on research infrastructure development and capacity building through relevant research and training.

The present internal review seeks to re-examine the overall research policy direction of the institute, assess institutional training and manpower needs and develop a medium term research and development agenda for the next three years (1997-2000).

In a series of discussions with all research units of the Institute, the following ideas about future research activities of the Institute emerged:

1. Research

   - that research direction of the Noguchi Institute should still focus on research on communicable and infectious diseases, and nutritional problems,
   - that changing epidemiologic patterns of disease in Ghana may in future demand that health research attention be paid also to non-communicable diseases such as cancer, hypertention, cardiovascular diseases, diabetes etc,
   - that the Institute maintains its status as a centre of exellence for bio-medical and public health research,
   - that the Institute actively seeks research collaboration and linkages with other health sector research institutions (e.g. Research Unit of MOH, CSIR, the Medical Schools) and directly with MOH at district and regional and national levels,
   - that dissemination and utilization of research findings should be actively promoted in concert with policy makers and senior programme managers of MOH.

2. NMIMR as a Training Centre for Health Scientists and Health Professionals

   The mandate of the Institute "to provide training opportunities for postgraduate students in medical research" is yet to be fully realised. Now that research infrastructure and manpower capacity at the Institute have been considerably strengthened, the medium term programme should fully address this.

   Suggested training activities and programmes should include:

   - Postgraduate training in health related sciences (M.Phil, MSc, PhD.). There is a need to formalise and integrate training at this level with relevant

Departments/Faculties of the University of Ghana through the office of the Dean of Graduate Studies. Co-supervision of graduate research and due recognition of NMIMR should be the minimal requirements for acceptance for graduate research work at the Institute. The Institute could also offer graduate programmes directly. This possibility needs to be explored with the University.

- NMIMR could offer short-term specialized training attachments or electives to health scientists or health professionals on individual basis.
- The Institute could promote and serve as a regional and international training centre in the health sciences.

3. Technical support to National Public Health Programmes

There was general agreement that such service could be most appropriately and effectively rendered in the form of consultancies to health sector organizations and various arms of the Ministry of Health and other health institutions - at all levels of care. Such support activities are to be promoted under the medium-term programme. With this in view it is envisaged that scientific capabilities of the Institute need to be disseminated widely both in and outside Ghana.

RESEARCH PROGRAMMES (1997 - 2000)

Parasitology Unit

Research effort will aim at effective control of major parasitic diseases through improved diagnosis, and development and testing of appropriate control strategies in the following areas:

Schistosomiasis

- Development of alternate diagnostic methods/assays
- Vaccine research and development
- Studies on schistosomiasis strains in Ghana
- Intervention studies for control of schistosomiasis

Onchocerciasis

- Biological control of onchocerciasis vectors
- Onchocerciasis vector studies

Malaria/Filariasis (Vector studies)

- Population dynamics and vectorial roles in transmission of malaria and filariasis
- Vector transmitted viral diseases

Molecular methods applicable in parasitology are to be fully developed.

Virology Unit

- HIV/AIDS

  Antigenic and molecular characterization of HIV strains in Ghana.

  Antiviral chemotherapy.
- Viruses associated with hepatic diseases
- Vaccine preventable diseases (including yellow fever and haemorrhagic fevers)

Epidemiology Unit

- Malaria (epidemiology, intervention studies and vaccine trials)
- Filariasis (epidemiology and intervention studies)
- Primary health care and health policy research
- Vaccine preventable diseases

Bacteriology Unit

- Food microbiology and food safety research
- Tuberculosis
- Diarrhoea diseases

Clinical Pathology Unit

- Applied toxicology research (toxicology of heavy metals, xenobiotics and endotoxins)
- Natural products (emphasis on medicinal plants)
- Sickle cell and abnormal haemoglobins (Reference laboratory)

Electron Microscopy/Histopathology Unit

- Ultrastructural studies on malaria and other parasitic diseases.

Immunology Unit

- Immunology of parasitic diseases (Malaria, Filariasis, Schistosomiasis)

Nutrition Unit

- Micronutrient research
- Child nutrition and growth
- Food and nutrition policy research

Laboratory Animals Unit

Monitoring activities

- Microbial monitoring of animal facility and laboratory animals
- Genetic monitoring of laboratory animals

- Establishment of the grasscutter (Thryonomys swinderianus) as an indigenous laboratory animal and a micro-livestock.

INSTITUTIONAL NEEDS

General

1. Data Management

There is a critical need to improve and enhance the data-management and analysis capability at the Institute. This could be best achieved in the long run by creating a separate Unit of "Medical statistics and data management" responsible for statistical input of project proposals and analysis of all generated data at the Institute. In the interim there is need to define more clearly and integrate more functionally the services which the Epidemiology Unit can provide in this regard.

2. Molecular Biology Facility

The pros and cons for possible establishment of a common facility/laboratory dedicated to molecular biology needs to be further discussed.

3. Vector laboratory

The present insectory, located at the Parasitology Unit, is inadequate for any large scale diversified vector studies. Serious consideration should be given to the establishment of a vector laboratory and vector isolation facilities at the Institute.

4. Centralized and common facility area

It is suggested that certain facilities of common usage such as centrifuges, distillers, ice flakes and dry ice machine etc could be placed in common usage rooms instead of the present duplications at the Institute. This will be more economical and will reduce waste and maintenance costs.

5. Medical Illustration

The EM/Histopath Unit presently handles the Institute's needs in illustrations, slide preparations etc. The capacity of EM/Histopath Unit to provide this service needs to be enhanced.

6. Electronic/Instrumentation Repair and Maintenance

There is a need to establish such a unit/subunit at the Institute. Recently acquired laboratory equipment and instruments incorporate high technology components and it will be prudent to invest in the establishment of an equally high instrumentation repair and maintenance system.

7. Disposal of hazzardous material/reagents

By nature of its activities, a proper centralised disposal/inceration system that efficiently take care of all hazzardous and infections waste materials generated at the Institute is long overdue.

ADMINISTRATION

As the Institute continues to grow and modernise into the next century, the need to equip and strengthen Administration to be able to support adequately the research functions of the Institute cannot be over-emphasized.

From now to the end of the century therefore, staffing needs of the Administration in the areas of recruitment and training to enhance capacity and performance will be addressed. Appropriate staff calibre will be recruited to fill vacancies; while training and retraining of staff on the ground in the appropriate skills and knowledge will be given more emphasis.

During the period, computerisation of the accounting function in the Institute will be finalised. This will be followed up by computerisation of personnel and stores records as part of an integrated information system for the Institute on the LAN.

SPECIFIC UNIT NEEDS

Virology:	-	Safety cabinents
	-	CO_2 incubator
	-	P3 laboratory
Parasitology:	-	Vector laboratory and isolation unit
Bacteriology:	-	Laboratory for TB research
	-	Work station for anaerobic bacteria
Clinical Pathology:	-	Physiograph
	-	U-V Spectrophotometer
	-	Atomic absorption spectrophotometer (replace aged one)
E/M/Histopath:	-	Electron microscope (to replace aged one)
Laboratory Animals	-	Computer and software (to assist in Laboratory animal management)
Administration	-	Two pentium (16 megabite) computers for Central Administration and Accounts Offices.

MANPOWER NEEDS

It is envisaged that within 2-3 years all existing vacancies should be filled through recruitment and upgrading of staff. (See Annex 1).

There is however urgency to fill the following positions of the scientific staff immediately.

Parasitology	-	2 Research Assistants
Virology	-	1 Research Assistant
		2 Technicians
Epidemiology	-	1 Research Fellow
Bacteriology	-	-
Clinical Pathology	-	1 Research Assistant
	-	1 Technician
Immunology	-	2 Research Assistants
	-	1 Technician
Laboratory Animals	-	1 Research Assistant
		1 Animal Technician
Nutrition	-	1 Research Assistant
		1-2 Technicians

Existing Research staff vacancies at NMIMR (September, 1996)

Research Fellows	8
Research Assistants	10
Technologists	5
Technicians	13

Suggested immediate recruitment (1997)

Research Fellow	1 (Epidemiology)
Research Assistants	8
Technologists	1
Technicians	7

Annex 1

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH
ESTABLISHMENT LIST AS AT 1ST SEPTEMBER, 1996

UNIT	GRADE	APPROVED ESTABLISHMENT	AT POST	VACANT
Administration	Director	1	1	-
	Asst. Registrars	2	1	1
	Accountant	1	-	1
	Librarian	1	-	1
	Admin. Assistants	3	3	-
	Systems Analyst	1	-	1
	Accounting Assistants	6	5	1
	Clerks	5	2	3
	Library Assistant	1	1	-
	Storekeepers	3	2	1
	Accounts Clerks	1	-	1
	Receptionist	2	2	-
	Asst. Transport Officer	1	1	-
	Drivers	11	7	4
	Artisans	2	2	-
	Works Superintendents	5	5	-
	Technician	1	-	1
	Tradesman	2	1	1
	Security Guards	10	6	4
	Watchmen	10	3	7
	Labourers	10	5	5
	Messenger/Cleaners	12	8	4
Epidemiology	Research Fellow	4	2	2
	Research Assistant	3	1	2
	Technologist	1	-	1
	Technician (Field)	4	2	2
	Nursing Officer	4	1	3
	Technical Assistant	-	1	-
Nutrition	Research Fellow	4	3	1
	Research Assistant	4	3	1
	Technician	4	2	2
Virology	Research Fellow	4	3	1
	Research Assistant	4	3	1
	Technologist	2	0	2
	Technician	4	2	2
	Lab. Assistant	1	-	1

Parasitology	Research Fellow	4	4	-
	Research Assistant	4	2	2
	Technician	4	4	-
	Lab/Field Assistant	2	1	1
Bacteriology	Research Fellow	3	2	1
	Research Assistant	3	2	1
	Technologist	2	1	1
	Technician	3	2	1
Immunology	Research Fellow	3	2	1
	Research Assistant	3	1	2
	Technician	3	2	1
Clinical Pathology	Research Fellow	4	3	1
	Research Assistant	4	3	1
	Technologist	2	1	1
	Technician	5	3	2
Electron Microscopy & Histo-Pathology	Research Fellow	2	1	1
	Research Assistant	2	2	-
	Technician	2	3	-
	Lab. Assistant	1	-	1
Laboratory Animals	Research Fellow	2	1 (Asst)	1
	Research Assistant	2	1	1
	Animal Technician	4	1	3
	Technical Assistant	-	1	-