BY AIR MAIL

PAR AVION

AIR LETTER

AEROGRAMME

P. K. Sukumaran, Esq.,

Royal Guest House,

Lady Hardinge Road,

Mahim,

BOMBAY 16.

First fold here

Second fold here

Sender's name and address:

ABNORMAL HAEMOGLOBIN RESEARCH UNIT
UNIVERSITY OF CAMBRIDGE
DEPARTMENT OF BIOCHEMISTRY
TENNIS COURT ROAD, CAMBRIDGE.

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Form approved by the Postmaster General, No. 71995/2E

IMPERIAL AIR MAIL
AEROGRAMMES

MEDICAL RESEARCH COUNCIL

ABNORMAL HAEMOGLOBIN RESEARCH UNIT

UNIVERSITY OF CAMBRIDGE, DEPARTMENT OF BIOCHEMISTRY,
TENNIS COURT ROAD, CAMBRIDGE.

Our Ref: HL/JAE

P. K. Sukumaran, Esq.,
Royal Guest House,
Lady Hardinge Road,
Mahim,
Bombay 16.

24th June, 1964.

Dear Suku,

Thank you very much for your letter of the 16th June, which I was very pleased to get.

I am glad you have returned safely, and that you have learnt a little with us, and certainly a great deal in Holland. Have you ever looked at the Haemoglobin J in India? We have recently started to analyse a Haemoglobin J from Dr. Liddell, and it seems to be similar to Haemoglobin $J_{Baltimore}$, except that the change is in the α-chain. Will you be able to do fingerprinting in Bombay etc. If not please do not hesitate to send things to us, and in general please keep in touch.

I am writing today to Oxford requesting them to send 'Functions of the Blood' as a gift to commemorate your visit to Europe 1962/64 and to remember.

Yours sincerely,

Hermann Lehmann

H. Lehmann

BY AIR MAIL

PAR AVION

AIR LETTER

AEROGRAMME

MR. P.K. SUKUMARAN

INDIAN CANCER RESEARCH CENTRE,

PAREL,

BOMBAY, 12.

INDIA.

First fold here

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Sender's name and address:

ABNORMAL HAEMOGLOBIN RESEARCH UNIT
UNIVERSITY OF CAMBRIDGE
DEPARTMENT OF BIOCHEMISTRY
TENNIS COURT ROAD, CAMBRIDGE.

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IMPERIAL AIR MAIL
AEROGRAMMES

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MEDICAL RESEARCH COUNCIL

ABNORMAL HAEMOGLOBIN RESEARCH UNIT

UNIVERSITY OF CAMBRIDGE, DEPARTMENT OF BIOCHEMISTRY,
TENNIS COURT ROAD, CAMBRIDGE.

1st April 1965

Mr. P.K. Sukumaran,
Indian Cancer Centre,
Parel,
BOMBAY, 12
India.

Dear Suku,

I have today forwarded your application for admission to Fellowship to the Royal Society of Tropical Medicine and Hygiene signed by myself and Col. Mulligan. I hope all will go well.

Yours sincerely,

H. Lehmann.

H. Lehmann.

ED/ 7367 /69 October 16, 1969

Dear Professor Lehmann:

Thank you very much for sending me a set of your reprints, which I received today.

With kind regards,

Yours sincerely,

PKS -

P. K. Sukumaran
Scientific Officer

Professor H. Lehmann,
M.R.C.Abnormal Haemoglobin Unit,
University of Cambridge,
Department of Biochemistry,
Tennis Court Road,
CAMBRIDGE,
U.K.

MEDICAL RESEARCH COUNCIL

ABNORMAL HAEMOGLOBIN ~~RESEARCH~~ UNIT

With the Compliments of
Professor H. Lehmann

UNIVERSITY OF CAMBRIDGE
DEPARTMENT OF BIOCHEMISTRY
TENNIS COURT ROAD, CAMBRIDGE

TELEGRAMS:
SICKLECELL, CAMBRIDGE

TELEPHONE:
CAMBRIDGE (OCA-3) 63240

MEDICAL RESEARCH COUNCIL

ABNORMAL HAEMOGLOBIN RESEARCH UNIT

Telegrams: SICKLECELL, CAMBRIDGE
Telephone: Cambridge (OCA-3) 63240

UNIVERSITY OF CAMBRIDGE,
DEPARTMENT OF BIOCHEMISTRY,
TENNIS COURT ROAD,
CAMBRIDGE.

C O P Y

HL/PIB. 27th January, 1970.

Professor Irving J. Wolman, M.D.,
Hematologist,
The Children's Hospital of Philadelphia,
18th & Bainbridge Streets,
Philadelphia 19146,
(215) KI 6-2700,
U.S.A.

Dear Professor Wolman,

Thank you for your letter of January 22nd. It was delayed because it was addressed to the Radcliffe Infirmary, Cambridge. The Radcliffe Infirmary is at a lesser place - Oxford, and our Hospital is called Addenbrooke's. It will be a very special pleasure to see you in Cambridge on Monday March 2nd. A suitable train would be the 10.36a.m. from Liverpool Street Station which arrives at Cambridge at 11.42a.m. I would try to meet you but if I am unable to get away I would suggest that you take a taxi to the Old Addenbrooke's Hospital, Trumpington Street, (we are building a new one so it is important to use the word 'old'), where I shall be in the John Bonnett Clinical Laboratories of the Biochemistry Section and hope to see you there. I will also let Dr. Huntsman know so that he might be able to be here when you are coming, otherwise he is at Lambeth Hospital in London and I am sure if you can fit in a visit to him, you would find it rewarding. His address is Group Laboratory, Lambeth Hospital, Brook Drive, London S.E.11. Telephone REL 8141.

I presume that when you mention in your letter that you are travelling to Ferrara on Tuesday March 2nd you mean Tuesday March 3rd. and not Monday March 2nd !

Sickle cell anaemia is not so important in India as sickle cell thalassaemia and the man with whom I have particularly been in touch is Mr. P.K. Sukumaran at the Cancer Research Institute, Tata Memorial Centre, Parel, Bombay 12, India, who is in the department of which Dr. Sanghvi is the Head. I think Dr. Sanghvi is at the moment in the United States. A discussion with Mr. P.K. Sukumaran would be very much worth your while.

/over.

Would you please let me know whether Mrs. Wolman will be coming with you because I will then book lunch at a hotel, otherwise if you are by yourself we could have lunch at College or in the Consultant's Dining Room. My wife is teaching but if at all possible I am sure she would like to make herself free to meet Mrs. Wolman.

I am writing to Dr. Huntsman and to Mr. Sukumaran about your possibly contacting them.

Kind regards and very much looking forward to meeting you again my dear Professor Wolman.

I am,
Yours sincerely,

Hermann Lehmann.

H. Lehmann.

ED/857/70 February 2, 1970

Dear Professor Lehmann:

This has reference to the copy of your letter dated 27th January 1970 to Professor Irving J. Wolman, Children's Hospital, Philadelphia, sent to me for information.

I thank you for suggesting my name in order that he may contact me in connection with sickle cell thalassaemia cases in this part of the country during his visit to India.

I shall be delighted to meet Professor Wolman and discuss with him problems of mutual interest. I do hope to hear from him in advance. Dr.Sanghvi, Head of our Division is now away in Wisconsin and shall be back only in June this year.

With kind regards,

Yours sincerely,

P. K. Sukumaran

Professor H. Lehmann,
Medical Research Council,
Abnormal Haemoglobin Research Unit,
University of Cambridge,
Department of Biochemistry,
Tennis Court Road, Cambridge,
England

ED/2593/70 APRIL 18, 1970

Dear Professor Lehmann:

This is in continuation of my letter dated February 2, 1970.

I am glad to say that Professor Wolman, Children's Hospital, Philadelphia, visited our laboratories as per your suggestion. My colleagues and I had very useful discussions with him on subjects of mutual interest.

I thank you for remembering me in this connection.

With personal regards,

Yours sincerely,

PKS

P. K. Sukumaran
Scientific Officer

Professor H. Lehmann,
Medical Research Council,
Abnormal Haemoglobin Research Unit,
University of Cambridge,
Department of Biochemistry,
Tennis Court Road, Cambridge
England

THE
CHILDREN'S
HOSPITAL
OF
PHILADELPHIA
FOUNDED 1855

18th & BAINBRIDGE STREETS
PHILADELPHIA 19146
(215) KI 6-2700

May 22, 1970

Mr. P. K. Sukumaran
Cancer Research Center
Tata Cancer Hospital Annex
Parel, Bombay 12 India

Dear Mr. Sukumaran:

I have been back at my office for only a week and I am just beginning to write to the many persons who were so kind and friendly during my recent trip to India.

I trust that the plans for moving into Wadia Children's Hospital are progressing satisfactorilly. One would anticipate that in the wealth of clinical material there, the laboratory would be able to find a diversity of interesting cases worthy of detailed study. From a personal point of view, I found the hours spent visiting with you very informative and stimulating.

Needless to say, if the winds of fate ever blow you towards the United States, do try to put Philadelphia on the list. Mrs. Wolman and I would be very glad to receive you here.

Very cordially yours,

Irving J. Wolman, M.D.
Hematologist

IJW:cmf

cc: Professor Lehman

ED/ 3678 /70 June 3, 1970.

Dear Prof. Lehman,

I have to-day despatched by AIR MAIL POST one blood sample (G.C.A.) in EDTA for the identification of the haemoglobin variant fraction in the same.

This sampâe is from the father of a child diagnoud as thalassemia major with Hb F = 32%. When this child came to us few days after receiving few bottles of blood, the foetal Hb had come down to 23.7%. Mother showed evidence of β - thalassemia trait with Hb A_2 raised (5.23%). Father showed increased Hb A_2 total 4.2% and haemogram suggestive of β - thalassemia trait. His haemoglobin on electrophoresis showed a slow moving fraction about 8% and two typew of Hb A_2 (normal and a slow moving type). Abnormal adult haemoglobin was slower than A faster than D and moving near about Hb - L. Possibility of this being Lepore is not ruled out. I have yet to do a family study. Meanwhile I got a fresh sample of father's (G.C.A.) blood which I have despatched to you.

Kindly do the needful and let me know in due course. This family comes from a place 250 miles away from Bombay is difficult to contact as of when we want.

I had a very nice letter from Prof. Wolman after his return to Philadelphia.

With kind regards,

Yours sincerely,

P.K. Sukumaran,
Scientific Officer.

Prof. H. Lehman,
M.R.C.Abnormal Haemoglobin Unit,
University of Cambridge,
Dept. of Biochemistry,
Tennis Court Road,
CAMBRIDGE, ENGLAND.

/smn

MEDICAL RESEARCH COUNCIL

ABNORMAL HAEMOGLOBIN RESEARCH UNIT

Telegrams: SICKLECELL, CAMBRIDGE
Telephone: Cambridge (OCA-3) 63240

UNIVERSITY OF CAMBRIDGE,
DEPARTMENT OF BIOCHEMISTRY,
TENNIS COURT ROAD,
CAMBRIDGE.

11th June, 1970.

P.K. Sukumaran Esq.,
Scientific Officer,
Cancer Research Institute,
Tata Memorial Centre,
Parel, Bombay,
INDIA.

My dear Suku,

Thank you very much for your letter of 3rd June and the interesting sample which you sent me. I enclose a copy of the paper electrophoresis where I compared your sample with Haemoglobin Lepore and you can see that they are not the same. On chain separation it also shows that your haemoglobin is an α-chain abnormal haemoglobin. It would be wonderful if this was our long searched for Haemoglobin L.

We have about 3-6 cc. packed cells so one should be able, with any luck, although the abnormal haemoglobin is at such a low percentage, to get something like 200 mg. out of it, and this again with any luck, should perhaps be enough for identification. If you have any more of the material, please by all means send it because if it is one of these large α-chain peptides, as you know, it needs a great deal of material to break it up into smaller components and identify the abnormality.

With kindest regards and good wishes to all my friends at the Tata Memorial Centre.

I am,

Yours sincerely,

H. Lehmann.

Photographs will not fit on the Case folder.

ED/4324/70 June 27, 1970

Dear Prof. Lehmann,

Thank you for your letter dated June 11, 1970 and also the enclosed photograph of the electrophonetic patterns.

The abnormal fraction in this sample (GCA) showed a mobility near about, but not quite similar to Hb-L. If it is Hb-L, the apparant difference in mobility may be due the low concentation of the fraction. Whatever samples of Hb.L we have seen here, all are more in concentation than this sample. Hence I wanted your valuable opinion on this specimen.

I do hope you will be able to make some headway with the remaining material with you. I have not been able get any more sample from this individual. However I am sending you a small quantity of haemoglobin (GCA) sample in carboxy-form left over with me. I hope this will be useful to you. Meanwhile I understand that the child (propositus) in this family had to be given another blood transfusion.

Invidentally could you please enlighten me as to whether Hb-Q has been characterized so far, if so what is the position with regard to amino acid substitution ? Hb-Q to be T-9 is all what I have known.

Dr. Sanghvi is expected back from the states in a few days time.

Kindly acknowledge the receipt of the sample and its condition on arrival.

With kind regards,

Yours sincerely,

P.K. Sukumaran,
Scientific Officer.

Prof. H. Lehmann,
M.R.C.Abnormal Haemoglobin Unit,
University of Cambridge,
Dept. of Biochemistry,
Tennis Court Road,
Cambridge,
ENGLAND.

/snn

MRC
Medical Research Council

MRC Abnormal Haemoglobin Unit
University of Cambridge
Department of Biochemistry
Tennis Court Road, Cambridge, England

telephone Cambridge 63240 & 51781 ext 21
cables Sicklecell Cambridge

reference HL/PIB.

30th June, 1970.

P.K. Sukumaran, Esq.,
Scientific Officer,
Cancer Research Institute,
Tata Memorial Centre,
Parel, Bombay 12,
India.

Dear Suku,

Thank you for your letter of June 27th. I have now isolated the ? Haemoglobin L and we hope to proceed to its fingerprinting etc. soon. I hope to let you have an answer as soon as possible but there may be some delay because so many people are on holiday and work is proceeding somewhat slowly.

As regards Haemoglobin Q, we have examined this, it is a mutation of aspartic acid to histidine in T 9. We have found two different Haemoglobins Q, one in Iran where the mutation is at $\alpha 75$ and one in Thailand which I presume is the original Haemoglobin Q where the mutation was $\alpha 74$. I noticed the other day that Blackwell and colleagues described what they call Haemoglobin G in a Chinese which had the latter mutation also. We are having an article about the two Haemoglobins Q in the press in the British Journal of Haematology which will come out very soon.

As soon as I have received the new sample I will let you know and let you know also how it arrived. The fist sample arrived of course in very good condition.

Kind regards,
Yours sincerely,

Hermann Lehmann.

H. Lehmann.

BY AIR MAIL
PAR AVION
AIR LETTER
AEROGRAMME

Cambridge Festival
16th March July 1966

P.K. Sukumaran,
Scientific Officer,
Cancer Research Institute,
Tata Memorial Centre,
Parel, Bombay 12,
INDIA.

First fold here

Second fold here

Senders name and address :

MRC Abnormal Haemoglobin Unit
University of Cambridge
Department of Biochemistry
Tennis Court Road, Cambridge, England

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AIR LINE
AEROGRAMMES

ED/ 4731 /70 July 10, 1970

Dear Prof. Lehmann,

Thank you for your letter of June 30th. I am glad to hear that you have isolated the haemoglobin ? L and waiting to proceed to its fingerprinting etc. I do hope you have by now the small quantity of haemoglobin sample (G.C.A.) received in good condition.

Recently we had another case of suspected Cooley's anaemia, with the propositevs (H.K.L.) a child of 5 months with 56.2% foetal haemoglobin. On electrophoresis this haemoglobin showed the major fraction to be Hb F and a small slow-moving fraction. Father (K.K.L) showed on electrophorenis, Hb A + slow fraction + A_2 and an abnormal A_2 fraction. Father's haemoglobin showed mobility similar to the Hb of the last sample (G.C.A.) sent to you. Hb A_2 in father (K.K.L) is found to be raised (3.57%) and the mother showed a picture similar to β- Thalassemia trait with Hb A_2 raised (4.45%). If this abnormal haemoglobin is ? L, possibly the child has inherited both ? Hb L (α-chain) and β- Thalassemia from father and only β- Thalassemia from mother resnlting in the production of increased Hb-F and perhaps an abnormal Hb-F. I am just thinking aloud! This child clinically and haematologically seems to be a case of β- Thalassemia major. I have not done any heat denaturation test on this sample. This child has already received blood transfusion few days ago.

I am sending by separate post (air mail) a small quantity of haemoglobin sample from father (K.K.L) and another sample from child (H.K.L). I do hope they reach you in good condition for you to work on them. I shall be greatly obliged if you will do the needful with them.

Please acknowledge the receipt of the specimens. Dr. Sanghvi sends you his greetings.

With kind regards,

Yours sincerely,

P.K. Sukumaran

P:K. Sukumaran,
Scientific Officer.

LGS
10.VII.70

Prof. H. Lehmann,
MRC Abnormal Haemoglobin Unit,
Univ. of Cambridge,
Tennis Court Road,
ENGLAND.

/snn

Air Mail

ED/4889 /69 July 16th, 1969

Dear Prof. Lehmann:

In a preliminary survey, among the Gujarati speaking Lohanas of Bombay, for blood groups and haemoglobin variants, we came across cases of Hb. A+J besides Hbs. A+D and A+L.

Lately we studied one Hb-J sample, in them, by hybridization and found this to be of α-chain type. This was from Halai Lohana, a group from which we had our first case of Hb-A+J (mother) who had a child with thalassaemia major. We have presented the data on Lohanas, along with results of hybridization of abnormal haemoglobins found in them, at the XXIV Joint Annual Conference of Physicians of India and Indian Society of Haematology and Blood Transfusion, Hyderabad, January 22-25, 1969.

I shall be highly obliged if you will characterize this Hb-J further. I am waiting for the patient to return from his village when I shall persuade him to give some more blood to send to you. I had to coax him a good bit to get some blood last time.

Meanwhile, please let me know what would be the minimum quantity you require and how you wish the blood to be preserved and sent to you.

Hope to hear from you soon and with kind regards.

LGS 16.VII.69

Yours sincerely,

PKS

P. K. Sukumaran
Scientific Officer

Professor H. Lehmann,
Abnormal Haemoglobins Research Unit,
Department of Biochemistry,
University of Cambridge,
England.

MRC
Medical Research Council

MRC Abnormal Haemoglobin Unit
University of Cambridge
Department of Biochemistry
Tennis Court Road, Cambridge, England

telephone Cambridge 63240 & 51781 ext 21
cables Sicklecell Cambridge

reference

PIB.

17th July, 1970.

P. K. Sukumaran, Esq.,
Scientific Officer,
Cancer Research Institute,
Tata Memorial Centre,
Parel, Bombay 12,
INDIA.

Dear Mr. Sukumaran,

I acknowledge with thanks receipt of the specimens which are being examined. Professor Lehmann is at present oversease but he will write to you as soon as he returns to Cambridge.

Yours sincerely,

P. Brown (Mrs)

Secretary to Professor Lehmann.

LB
27.VII

BY AIR MAIL
PAR AVION
AIR LETTER
AEROGRAMME

P. K. Sukumaran, Esq.,
Scientific Officer,
Cancer Research Institute,
Tata Memorial Centre,
Parel, Bombay 12,
INDIA.

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Senders name and address :

MRC Abnormal Haemoglobin Unit
University of Cambridge
Department of Biochemistry
Tennis Court Road, Cambridge, England

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AIR LINE
AEROGRAMMES

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MRC
Medical Research Council

Abnormal Haemoglobin Research Unit
University of Cambridge
Department of Biochemistry
Tennis Court Road, Cambridge
England

cables Sicklecell, Cambridge

reference

18th July, 1969.

Mr. P.K. Sukermaran,
Scientific Officer,
Cancer Research Institute,
Tata Memorial Centre,
Parel,
BOMBAY 12.
India.

Dear Suku,

Thank you for your letter of July 16th, I shall certainly be interested in looking at the Haemoglobin J. We have recently looked at three different Indian families in this country with a Haemoglobin J α, and found it to be Haemoglobin J α Paris. It is interesting that it was found before only in Spain and Portugal.

I would, however, be much more interested in having a look at Haemoglobin L again because this is a haemoglobin I am particularly interested to investigate and clarify. We have recently looked at a Haemoglobin L from Iran but I don't think this is the same as the Indian L.

If you send me any haemoglobin, please send it by Air Freight in a thermos flask and send a telegram a day or two before to tell me by which flight it will arrive in London and on what day. The telegram can be addressed to the above telegraphic address, and we shall then make arrangements to meet the sample. It would be best if you sent washed red cells with a little bit of penicillin in it.

Kind regards, and I hope all is going well with you.

Yours sincerely,

Herman Lehmann.

H. Lehmann.

24.VII.69

I shall be away from
23. July to 13 August,
but if the blood comes
in this period my staff will cope with collection etc.!

←To open cut here

PAREL BOMBAY-12 DD 8 JULY 1969

POST EARLY TO CATCH THE MAIL

Sender's name and address:

Abnormal Haemoglobin Research Unit
University of Cambridge
Department of Biochemistry
Tennis Court Road, Cambridge

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A John Dickinson Product

Form approved by Postmaster General No.—71995/IZ

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BY AIR MAIL
PAR AVION
AIR LETTER
AEROGRAMME

CAMBRIDGE 6-PM 28 JULY 1969

Mr. P.K. Sukumaran,
Cancer Research Institute,
Tata Memorial Centre,
Parel,
BOMBAY 12,
India.

ED/ 5330 /70 3rd August 1970

Dear Prof. Lehmann,

I hope by now you are back from your trip abroad.

On July 10, 1970, I had sent you small quantities of haemoglobin samples from an interesting case (H.K.L.) of suspected Cooley's anaemia. The receipt of this was acknowledged on July 17 th your secretary during your absence. I enclose two photographs of electrophoretic patterns of haemoglobins of this family for your information. One is a paper electrophoretic pattern of father (K.K.L.) compared with Hb.A + S and of propositus (H.K.L.) showing slow moving fraction besides Hb F compared with a known case of thalassaemia major. The other is of a starch gel with Hb A + S and the Hb of the previous case (GCA) used as control a run with father (KKL), propositus (HKL) and mother (RKL). It will be seen that the slow- moving fraction in father seems to run similar to GCA and shows abnormal Hb A_2 as well. Propositus shows Hb F and a slow fraction moving slower than the abnormal fraction in father. Mother seems to be thalassaemia trait with raised A_2 (4.45%).

I would like your views on this case after examining the samples I sent to you. I do hope they reached you in good condition. I am sure you will run a chromatography to establish the mobility of Hb-L. I have still at the back of my mind Hb-Lepore in this case. Your guidance in this matter will be very helpful.

Hope to hear from you in due course.

With kind regards,

Yours sincerely,

PKS

P.K. Sukumaran

Prof. Lehmann,
MRC Abnormal Haemoglobin Unit,
University of Cambridge,
Department of Biochemistry,
Tennis Court Road, Cambridge,
ENGLAND.

Enclo: Two photographs.

PKS/sy