

CURRICULUM VITAE

Personal Information

Anca Mihaela Bîna (Lungu)



E-mail:

lungu.anca@umft.ro

PROFESSIONAL EXPERIENCE

18.09.2017- 18.09.2022 Assistant professor Department III Functional sciences - Pathophysiology, „Victor Babeş” University of Medicine and Pharmacy Timișoara

1.01.2017 - present Resident in Obstetrics and Gynecology

12.10.2016 Associate assistant professor Pathophysiology, Department III Functional sciences

2013–2016 Volunteering tutor within the VADA program at discipline of Pathophysiology at “Victor Babeş” University of Medicine and Pharmacy of Timișoara, RO
Certificate number 3/24.06.2016
According to volunteer contract number nr 16586/28.12.2015

EDUCATION AND FORMATION

**2017-2018 Psychopedagogy Program – Level I
Psychopedagogy Program – Level II**
„West University” Timișoara, Romania

2016 -2022 PhD in Medicine – Thesis title: *Contributions to the elucidations of the role of mitochondrial dysfunction in obstetric pathology* - **Summa cum laude**
Supervisor.: Prof. Danina M. Muntean
Location: Center for Translational Research and Systems Medicine, “Victor Babeş” University of Medicine and Pharmacy of Timișoara, RO

2010–2016 Medical Doctor
“Victor Babeş” University of Medicine and Pharmacy of Timișoara, Romania
Graduation grade average: 9.84

- Grade in the License exam: 9.94
- 2006–2010 Bachelor Diploma**, series Y Nr. 0031174/09.07.2010
 „Nikolaus Lenau” High school Timișoara
 - Graduation mark: 9.65
 - Bachelor exam grade: 9.57
- 2010 Deutsches Sprachdiplom** der Kultusministerkonferenz- Zweite Stufe
 Level C1

PERSONAL COMPETENCE

Maternal language: Romanian

Other foreign languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Participation in the discussion	Conversation	
German	C1	C1	C1	C1	C1
Deutsches Sprachdiplom					
English	B2	B2	B2	B2	B2

Levels: A1/A2: Elementary user - B1/B2: Independent user - C1/C2: Experienced user
 European common reference card for foreign languages

Communication abilities

- good communication skills
- decision making
- empathic

Management/Organizational abilities

- leadership
- organizational spirit

Participation in academic events:

Postgraduate courses and summer schools - lecturer:

1. “Actualități în diagnosticul de laborator și paraclinic: de la biomarkeri la algoritmi”, Curs postuniversitar, 02-12.02.2022, online
2. “Actualitati in fiziopatologia, markerii diagnostici si riscul cardiovascular in diabetul zaharat si boala cronica de rinichi”, Postgraduate Course, 18-29.03.2021, online event
3. “Biomarkeri in afectiunile cornice: aspecte fiziopatologice si clinice”, Postgraduate Course, 04-16.03.2021, online event
4. “Aspecte fiziopatologice și clinice în afecțiunile cronice”, Postgraduate Course, 11-21.06.2020, online event
5. “Tehnici practice de bază în medicină” Workshop, 02.03.2018-04.03.2018, Timișoara
6. Summer school “Școala de Ginecologie”, 03-09 september 2017, Oradea

International scientific events:

1. The 8th European Section Meeting of the International Academy of Cardiovascular Sciences, Szeged, Ungaria, 28.09-01.10.2022
2. 30th Anniversary of the ISP, Centre of Experimental Medicine Slovak Academy of Sciences, Bratislava, Slovakia 29-30 November 2021, online event
3. 23rd International Conference on Oxidative Stress Reduction, Redox Homeostasis & Antioxidants, Paris, 13-15 October 2021, online event
4. The 7th Meeting of European Section and 8th Meeting of North American Section of the International Academy of Cardiovascular Sciences, Banja Luka, Serbia, 20-23 September 2021, online event
5. The 6th European Section Meeting of the International Academy of Cardiovascular Sciences, Vrnjacka Banja, Serbia, 11-14 September, 2019.

National scientific events with international participation:

1. Concepte Moderne în Endometrioză și Chirurgie Ginecologică, Medicină Fetală și Infertilitate, 20 - 22 september 2019, Timisoara
2. Națională a Societății Române de Fiziopatologie, 4-7 Septembrie, 2019, Târgu-Mureș
3. "Concepte modern în Ginecologie, Medicină fetală și Infertilitate" 01-03 june 2018, Timișoara
4. Conferința "The 11th annual meeting of the Egon and Diczfalusy Foundation", 05-06 october 2017, Orăștie
5. The 9th DKMT Conference of Obstetrics and Gynecology, 06-07 october 2017, Orăștie
6. Conference and Advanced Research Workshop "Sudden Cardiac Death & Cardioprotection", Timișoara, 6-9 september 2012.

National scientific events:

1. Zilele anuale ale Institutului Național pentru Sănătatea Mamei și Copilului "Alessandrescu-Rusescu", 9-11.12.2021, online
2. Timisoara INSPO Advanced research, 19.03.2021, online event
3. AL XIII-lea Congresul Național al Societății Române de Fiziologie, 22 – 24 october 2020, online webinar event.
4. Zilele Universității de Medicină și Farmacie "Victor Babeș" Timișoara, 11 December 2019, poster presentation
5. "Actualizări în Chirurgia ginecologică vaginală și laparoscopică", 09-10.11.2018, Timisoara

Participation in postgraduate courses, summer schools and workshops:

1. Postgraduate course "Infertilitatea de cauză endocrină", 9-10 march 2018, Timișoara
2. JPEMS Alumni Summer School on "Surgery, surgical skills", 22-24 august 2016, Szeged;
3. Cursul Național de Ghiduri și Protocoale în Anestezie, Terapie intensivă și Medicină de Urgență, Timișoara, 8-10 October 2015
4. Advanced Research Workshop "Translational Research in Mitochondria Disease", Timișoara, 16 October 2015

5. Summer school "Studiul ficatului, Ficatul de la funcție la disfuncție", 14-19 July 2014, Timișoara
6. Workshop "Students as Peer-Teachers and Mentors. A workshop on Contemporary Educational Methods" during eMediqual Closing Conference, 21 November 2013
7. Summer school "Sistemul urinar: Malpighi în 2013", 15-20 July 2013, Timișoara
8. Workshop for students "The standardized patient" during Timișoara Medical Education days, 17 April 2013
9. Summer school "De la moleculă la terapie în evaluarea sindroamelor alergice respiratorii, 9-16 July 2012, Timișoara
10. "Student's Symposium eMediqual 2012", Timișoara, 20-21 april 2012

SCIENTIFIC PUBLICATIONS

ISI Papers:

1. Zoran Laurentiu Popa, Madalin-Marius Margan, Izabella Petre, Elena Bernad, Lavinia Stelea, Veronica Daniela Chiriac, Marius Craina, Ioana Mihaela Ciuca, **Anca Mihaela Bina**. *A Cross-Sectional Study of the Marital Attitudes of Pregnant Women at Risk for Cystic Fibrosis and Psychological Impact of Prenatal Screening*. International Journal of Environmental Research and Public Health, 15 July 2022, doi.org/10.3390/ijerph19148698.
2. **Bîcă AM**, Sturza A, Iancu I, Mocanu AG, Bernad E, Chiriac DV, Borza C, Craina ML, Popa ZL, Muntean DM, Crețu OM. *Placental oxidative stress and monoamine oxidase expression are increased in severe preeclampsia: a pilot study*. Mol Cell Biochem. 2022 Jun 13. doi: 10.1007/s11010-022-04499-w.
3. **Bîcă AM**, Aburel OM, Avram VF, Lelcu T, Lința AV, Chiriac DV, Mocanu AG, Bernad E, Borza C, Craina ML, Popa ZL, Muntean DM, Crețu OM. *Impairment of mitochondrial respiration in platelets and placentas: a pilot study in preeclamptic pregnancies*. Mol Cell Biochem. 2022 Apr 7. doi: 10.1007/s11010-022-04415-2.
4. Lelcu T, **Bîcă AM**, Dănilă MD, Popoiu CM, Aburel OM, Arghirescu ST, Borza C, Muntean DM. *Assessment of Platelet Mitochondrial Respiration in a Pediatric Population: A Pilot Study in Healthy Children and Children with Acute Lymphoblastic Leukemia*. Children (Basel). 2021 Dec 17;8(12):1196. doi: 10.3390/children8121196.
5. Vlad Florian Avram, **Anca Mihaela Bina**, Alexandra Sima, Oana Maria Aburel, Adrian Sturza, Ovidiu Burlacu, Romulus Zorin Timar, Danina Mirela Muntean, Eskil Elmér, Octavian Marius Crețu, *Improvement of Platelet Respiration by Cell-Permeable Succinate in Diabetic Patients Treated with Statin*, Life, 2021 Mar 28;11(4):288. doi: 10.3390/life11040288
6. Loredana N Ionică, Laura Gaiță, **Anca M Bîcă**, Raluca Soșdean, Rodica Lighezan, Alexandra Sima, Daniel Malița, Octavian M Crețu, Ovidiu Burlacu, Danina M Muntean, Adrian Sturza *Metformin alleviates monoamine oxidase-related vascular oxidative stress and endothelial dysfunction in rats with diet-induced obesity*, Molecular and Cellular Biochemistry, 2021 Jul 3. doi: 10.1007/s11010-021-04194-2

7. Cristina E. Savencu, Adina Lința, Gianina Farcaș, **Anca M. Bîănă**, Octavian M. Crețu, Daniel C. Malița, Danina M. Muntean, Adrian Sturza, *Impact of Dietary Restriction Regimens on Mitochondria, Heart and Endothelial Function - A Brief Overview*, *Frontiers in Physiology*, 2021 Nov 17
8. Merce AP, Ionică LN, **Bîănă AM**, Popescu S, Lighezan R, Petrescu L, Borza C, Sturza A, Muntean DM, Crețu OM. *Monoamine oxidase is a source of cardiac oxidative stress in obese rats: the beneficial role of metformin*. *Mol Cell Biochem*. 2022 Jun 20. doi: 10.1007/s11010-022-04490-5. Epub ahead of print. PMID: 35723772.

Papers in international data bases:

1. **Bîănă, AM**, Anechitei AI, Lelcu T, Lința AV, Chiriac DV, Mocanu AG, Bernad E, Popa ZL, Craina ML, Muntean DM, Borza C, Crețu OM. *Assessment of the systemic oxidative stress in preeclampsia*. *Serbian Journal of Experimental and Clinical Research*, vol.23, no.1, 2022, pp.45-50. <https://doi.org/10.2478/sjocr-2022-0010> BDI journal
2. Merce AP, Buriman DG, Lascu A, **Bîănă AM**, Feier HB, Petrescu L, Borza C, Sturza A, Muntean DM, Crețu OM. *Metformin Reverses the Effects of Angiotensin 2 in Human Mammary Arteries by Modulating the Expression of Nitric Oxide Synthases*. **Serbian Journal of Experimental and Clinical Research 2022**, vol. 23 (3); doi: 10.2478/sjocr-2022-0070.
3. Merce AP, **Bîănă AM**, Avram VF, Buriman DG, Lascu A, Feier HB, Petrescu L, Muntean DM, Elmér E, Crețu OM. *Cell-Permeable Succinate Improves Platelet Respiration in Patients Undergoing Cardiopulmonary Bypass: A Pilot Study*. **Timișoara Medical Journal 2022** (2), 2; doi:10.35995/tmj20220202.
4. Theia Lelcu, **Anca-Mihaela Bîănă**, Vlad-Florian Avram, Smaranda-Teodora Arghirescu, Claudia Borza, Mirela-Danina Muntean, *Permeable Succinate Improved Platelet Mitochondrial Respiration in Pediatric Acute Lymphoblastic Leukemia in Remission – Case Report*, **Scripta Medica 2022**; DOI:10.5937/scriptamed53-37038

ISI Abstracts:

1. Adrian Sturza, **Anca M. Bina**, Raluca Sosdean, Simona Popescu, Loredana Ionica, Claudia Borza, Danina Muntean, *Monoamine oxidase contributes to the metabolic memory in diabetic mice*, *Archives of Cardiovascular Diseases Supplements*, Volume 14, Issue 2, 2022, Page 156, ISSN 1878-6480, <https://doi.org/10.1016/j.acvdsp.2022.04.144>.
2. Adrian P. Merce, Adrian Sturza, Darius G. Buriman, Loredana Ionica, **Anca M. Bina**, Claudia Borza, Lucian Petrescu, Danina Muntean, *Mitigation of Monoamine Oxidase-Related Oxidative stress by Metformin and Empagliflozin in human atrial tissue*, *Archives of Cardiovascular Diseases Supplements*, Volume 14, Issue 2, 2022, Page 216, ISSN 1878-6480, <https://doi.org/10.1016/j.acvdsp.2022.04.128>.

Abstracts at international conferences:

1. **Anca M. Bîănă**, Adrian Sturza, Oana M. Aburel, Elena Bernad, Claudia Borza, Zoran L. Popa, Marius L. Craina, Danina M. Muntean *Placental mitochondrial respiration and monoamine oxidase expression are increased in atypical severe preeclampsia: a case presentation*, poster, 28.09-01.10.2022, The 8th European Section Meeting of the International Academy of Cardiovascular Sciences, Szeged, Ungaria, Abstract book p 68.
2. **Anca M. Bîănă**, Oana M. Aburel, Adrian Sturza, Adelina G. Mocanu, Dana Chiriac, Elena Bernad, Claudia Borza, Zoran L. Popa, Marius L. Craina, Danina M. Muntean, *Evaluation of mitochondrial dysfunction and oxidative stress in the setting of preeclampsia*, oral presentation, 29-30 November 2021, 30th Anniversary of the ISP, online event, Abstract book p 7
3. **Anca M BÎNĂ**, Oana M ABUREL, Adina LINȚA, Sorina CHELU, Zoran L. POPA, Marius L. CRAINA, Danina M MUNTEAN, Claudia BORZA, *Assessment of systemic and placental oxidative stress: a pilot study in preeclampsia*, poster presentation, 23rd International Conference on Oxidative Stress Reduction, Redox Homeostasis & Antioxidants, 13-15 October 2021, Paris, online event, Abstract book p 62
4. **Anca M Bîănă**, Theia Lelcu, Adina Lința, Vlad F Avram, Oana M Aburel, Claudia Borza, Zoran L Popa, Marius L Craina, Danina M Muntean , *Platelets and placenta mitochondria respiration is impaired in preeclampsia*, oral presentation, The 7th Meeting of European Section and 8th Meeting of North American Section of the International Academy of Cardiovascular Sciences, 20-23 September 2021, Banja Luka, Serbia. Abstract book, Scripta Medica 2021;52 Suppl 1, p.13, ISSN 2490-3329 (Print) ISSN 2303-7954 (Online)
5. **Bîănă AM** , Lelcu T, Avram VF, Aburel OM, Popa Z, Craina M, Muntean DM. *Assessment of platelet respiratory function in preeclampsia* – poster at The 6th Meeting of European Section and 7th Meeting of North American Section of the International Academy of Cardiovascular Sciences, 11-14 Septembrie, 2019, Vrnjacka Banja, Serbia. Abstract book, p.149, ISBN: 978-86-7760-136
6. Paul Bîănă, Radu N. Burghilea, **Anca M. Bîănă**, Anca Paraschivoiu, Ovidiu Bedreag, Dorel Săndesc, Claudia Borza, Adrian Neagu, Octavian M. Crețu, Danina M. Muntean, *Cell-permeable succinate rescues platelet mitochondrial respiration in covid-19 patients*, poster, 28.09-01.10.2022, The 8th European Section Meeting of the International Academy of Cardiovascular Sciences, Szeged, Ungaria, Abstract book p 69.
7. Oana-Maria Aburel, Adrian P. Merce, Laurentiu Braescu, **Anca-Mihaela Bîănă**, Cristian Mornos, Adrian Sturza, Claudia Borza, Danina M. Muntean, *Targeting mitochondria with methylene blue in human epicardial adipose tissue*, oral presentation, 28.09-01.10.2022, The 8th European Section Meeting of the International Academy of Cardiovascular Sciences, Szeged, Ungaria, Abstract book p 57.
8. Lința Adina – Valentina, Supervisors: **Bîănă M. Anca**, Muntean M. Danina, *Impairment of placental mitochondrial respiration in preeclampsia associated with fetal growth restriction*, oral presentation, Annual Student Research (TDK) Conference on Medicine, 17-19 November, 2021, Szeged
9. Adrian Sturza, Adrian P Merce, Loredana N Ionică, Laura Gaiță, **Anca M Bîănă**, Raluca Sosdean, Claudia Borza, Danina M Muntean, *Metformin mitigates monoamine oxidase-related cardiac oxidative stress in rats with induced obesity*, poster, 23rd International Conference on Oxidative Stress Reduction, Redox Homeostasis & Antioxidants, 13-15 October 2021, Paris, online event, Abstract book p 71
10. Adrian Sturza, Adrian P Merce, Loredana N Ionică, **Anca M Bîănă**, Danina M Muntean, *The Monoamine Oxidases are Sources of Cardiac Oxidative Stress in Obesity and Prediabetes*, oral presentation, 7th Meeting of European Section and 8th Meeting of North American Section of the

- International Academy of Cardiovascular Sciences, 20-23 September 2021, Banja Luka, Serbia. Abstract book, Scripta Medica 2021;52 Suppl 1, p.15, ISSN 2490-3329 (Print) ISSN 2303-7954 (Online)
11. Paul Bina, Vlad Florin Avram, **Anca-Mihaela Bina**, Oana Aburel, Radu Burghelea, Claudia Borza, Adrian Neagu, Elmér Eskil, Mirela Muntean Danina, *Platelet Respiration Is Impaired in Patients With Sepsis and Rescued by Cell Permeable Succinate: a Pilot Study*, oral presentation, 7th Meeting of European Section and 8th Meeting of North American Section of the International Academy of Cardiovascular Sciences, 20-23 September 2021, Banja Luka, Serbia. Abstract book, Scripta Medica 2021;52 Suppl 1, p.15, ISSN 2490-3329 (Print) ISSN 2303-7954 (Online)
 12. Adrian P Merce, **Anca M Bina**, Darius G Burimam, Vlad F Avram, Horea B Feier, Claudia Borza, Eskil Elmer, Danina M Muntean, *Cell-Permeable Succinate Improves Platelet Respiration in Patients Undergoing Cardiopulmonary Bypass: a Pilot Study*, oral presentation, 7th Meeting of European Section and 8th Meeting of North American Section of the International Academy of Cardiovascular Sciences, 20-23 September 2021, Banja Luka, Serbia. Abstract book, Scripta Medica 2021;52 Suppl 1, p.96, ISSN 2490-3329 (Print) ISSN 2303-7954 (Online)
 13. Mihaela-Roxana Patruica, **Anca Bîna**, Vlad F Avram, Florica Gadalean, Adrian Vlad, Lavinia Balint, Silvia Ienciu, Carmen Socaciu, Ligia Petrica, Danina M Muntean, *Impairment of Platelet Mitochondrial Respiration in Patients With Non-Diabetic Chronic Kidney Disease: a Pilot Study*, oral presentation, 7th Meeting of European Section and 8th Meeting of North American Section of the International Academy of Cardiovascular Sciences, 20-23 September 2021, Banja Luka, Serbia. Abstract book, Scripta Medica 2021;52 Suppl 1, p.97, ISSN 2490-3329 (Print) ISSN 2303-7954 (Online)
 14. Ligia Petrica, Mihaela Roxana Patruica, **Anca Bîna**, Vlad F Avram, Florica Gadalean, Adrian Vlad, Victor Dumitrascu, Daliborca Vlad, Roxana Popescu, Flaviu Bob, Petru Matusz, Dragos Catalin Jianu, Sorin Ursoniu, Danina M Muntean, *Platelet Mitochondrial Respiration is Altered in the Early Stages of Diabetic Kidney Disease: a Pilot Study*, oral presentation, 7th Meeting of European Section and 8th Meeting of North American Section of the International Academy of Cardiovascular Sciences, 20-23 September 2021, Banja Luka, Serbia. Abstract book, Scripta Medica 2021;52 Suppl 1, p.98, ISSN 2490-3329 (Print) ISSN 2303-7954 (Online)
 15. Lelcu T, **Bîna AM**, Avram VF, Aburel OM, Borza C, Arghirescu S, Muntean DM. *Assessment of Platelet Respiration in Blood Malignancies: A Pilot Study in Children and Adults – oral presentation at The 14th Conference on Mitochondrial Physiology "Mitochondrial function: changes during life cycle and in noncommunicable diseases"*, 13-16 October 2019, Belgrade, Serbia. Abstract book p. 76-77.
 16. Lelcu T, **Bîna AM**, Avram VF, Aburel OM, Borza C, Arghirescu S, Muntean DM. *Impairment of Platelet Respiration As Early Biomarker of Hematologic Malignancies – poster at The 6th Meeting of European Section and 7th Meeting of North American Section of the International Academy of Cardiovascular Sciences*, September 11-14, 2019, Vrnjacka Banja, Serbia. Abstract book, p.195, ISBN: 978-86-7760-136-2.

Abstracts at national conferences with international participation:

1. **Bîna AM**, Lelcu T, Avram VF, Aburel OM, Popa Z, Craina M, Muntean DM. *Platelet Respiration Is Impaired In Preeclamptic Pregnancies: A Pilot Study* - poster presentation at Conferința Națională a Societății Române de Fiziopatologie, 4-7 September, 2019, Târgu-Mureș. Acta Medica Marisiensis 2019; vol 65 (suppl 7): p.12-13.

2. Lelcu T, **Bîcă AM**, Avram VF, Aburel OM, Arghirescu S, Muntean DM. *Platelet Respiratory Function Is Early Impaired in Blood Malignancies – prezentare orală* la The 22nd Romanian – Hungarian Pediatric Oncology Meeting and the 14th Regional Central – Eastern/South – Eastern European Pediatric Onco-Hematology Meeting, 17-19 october 2019, București.
3. Lelcu T, **Bîcă AM**, Avram VF, Aburel OM., Arghirescu S, Muntean DM. *High-Resolution Respirometry in Human Platelets: Assessment of Mitochondrial Dysfunction in Blood Malignancies* – poster moderat la A 11-a Conferință Națională a Societății Române de Fiziopatologie cu participare internațională, 4-7 septembrie 2019, Târgu-Mureș. Acta Medica Marisiensis 2019; 65 (7): p.15, ISSN: 2068-3324.

Abstracts at national conferences:

1. **Bîcă Anca-Mihaela**, Mocanu Adelina-Geanina, Silaghi Carmen-Ioana, Dahma George, Neamțu Radu-Ionuț, Gluhovschi Adrian, Bernad Elena-Silvia, Craina Marius-Lucian. *Asocierea infecției SARS-COV-2 cu sarcina: studiu pilot al Maternității COVID-Bega*. Zilele anuale ale Institutului Național pentru Sănătatea Mamei și Copilului “Alessandrescu-Rusescu”, 9-11.12.2021, Volum de rezumate
2. **Bîcă AM**, Lelcu T, Avram VF, Aburel OM, Popa Z, Craina M, Muntean DM. *Assessment of mitochondrial respiration in preeclamptic placentas*. Al XIII-lea Congres Național al Societății Române de Fiziologie, online webinar event, 22 – 24 October 2020, Abstract book.
3. **Bîcă AM**, Lelcu T, Aburel OM, Popa Z, Craina M, Muntean DM, *Assessment of mitochondrial respiration in human placenta*, poster - Zilele Universității de Medicină și Farmacie "Victor Babeș" Timișoara, Sesiunea doctoranzilor, 11 December 2019, Timișoara, poster section
4. Avram VF, **Bîcă AM**, Åsander Frostner, Ehinger J, Elmér E, Timar R.Z, Muntean D.M. *Mitochondrial Effects Of Atorvastatin In Human Platelets In Health And Disease* - poster moderat la Al XIII-lea Congres Național al Societății Române de Fiziologie, online event, 22 – 24 October 2020, Abstract book
5. Lelcu T, **Bîcă AM**, Aburel OM., Arghirescu S, Borza C., Muntean D. *Platelet Respiration Is Early Impaired In Adults But Not Children With Hematological Malignancies*, poster - Zilele Universității de Medicină și Farmacie "Victor Babeș" Timișoara, Sesiunea doctoranzilor, 11 December 2019, Timișoara - poster
6. Lelcu T, **Bîcă AM**, Avram VF, Duicu OM., Arghirescu S, Muntean DM. *High-Resolution Respirometry in Human Platelets: Comparison of Two Protocols for the Assessment of Mitochondrial Dysfunction in Hematologic Malignancies* – prezentare orală la A 31-a Conferință Națională de Oncologie și Hematologie Pediatrică "Interdisciplinaritate în Oncologia Pediatrică", 9-11 May 2019, Bucharest